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Table of Contents

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ORIGINAL ARTICLES— PAGE.

"Premedication for Local Anæsthesia", by C. E. CORLETTE, M.D., Ch.M., D.P.H., F.R.A.C.S. .. 1
"Premedication in General Anæsthesia", by W. I. T. HOTTEN, M.B., Ch.M. 5
"The Use of 'Nembutal' in Childbirth", by W. J. RAWLINGS, M.B., B.S., M.C.O.G., D.G.O. 12
"The Pathogenicity of Dermanyssus Avium et Gallinæ and of Trichomes in the Human Being", by HERMAN LAWRENCE, M.R.C.P. 16

LEADING ARTICLES—

Renal Lithiasis 21

CURRENT COMMENT—

Vaccination against Smallpox 22
Renal Tuberculosis 23

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Dermatology 24
Urology 24

BRITISH MEDICAL ASSOCIATION NEWS—

Scientific 26
Nominations and Elections 30
Notice 30

CORRESPONDENCE— PAGE.

Iodized Boracic Powder in Otitis Media 30
A Cardiac Club 30
Cervical Sympathectomy in Retinitis Pigmentosa 30
The Mortality of Appendicitis 31

MEDICAL PRIZES—

The Walter Burfitt Prize 31

PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—

Queensland 31

OBITUARY—

Thomas Nisbett Wright 31
Alan Munro Edwards 32
Alfred Austin Lendon 32
Joseph Love 32

THE GEORGE MACDONALD TESTIMONIAL FUND 32

BOOKS RECEIVED 32

DIARY FOR THE MONTH 32

MEDICAL APPOINTMENTS VACANT, ETC. 32

MEDICAL APPOINTMENTS: IMPORTANT NOTICE 32

EDITORIAL NOTICES 32

PREMEDICATION FOR LOCAL ANÆSTHESIA.[1]

By C. E. CORLETTE, M.D., Ch.M. (Sydney), D.P.H. (Cambridge), F.R.A.C.S.,

Honorary Consulting Surgeon, Sydney Hospital, Sydney.

DURING the past eighteen years I have made a serious critical study of the technique and scope of local anæsthesia in major surgery. It is an interesting study, and I have learnt much that is valuable, and worth passing on. I have been asked on this occasion to discuss the subject of premedication.

Properly regarded, premedication must mean medical treatment—all medical treatment—designed to promote the complete success of the anæsthesia, carrying satisfaction to patient and surgeon alike. This success and this satisfaction are possible in at least ninety-nine out of every hundred cases, provided the surgeon is willing to learn.

A general anæsthetic acts primarily on the cortical centres. Afferent impulses still proceed from the periphery to the central system, but without registering conscious impressions. There is, for the time being, no conscious sensation, no personality. The patient sleeps, but it is a sleep deeper than the sleep of natural experience. This oblivion is of great value, though it brings a counterbalancing disadvantage in the fact that some operators hardly realize in the body before them a human individual. He is merely a "case", and little more to them than animated meat.

It is not so under unmodified local anæsthesia. The patient is in a different plane of existence. In contrast to the conditions of general anæsthesia, there remain to the patient sight, smell, hearing,

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 30, 1935.

taste, and, when no injections have been given, touch and pain sensation also. Even in the part injected a sense of touch remains, though pain sense is obtunded. There remain further, imagination, memory, the natural emotions, and the infirmities of the human mind, of which one is its inability to reason or judge correctly while in a state of terror. This attribute of unmodified local anæsthesia burdens it with some serious disadvantages, though it has the advantage on the other hand, that the surgeon is in little danger of forgetting that the patient is a living human individual. It compels him to use gentle technique. By suitable and skilful premedication the disadvantages can be banished, and the advantages retained.

Personality and the Pain Sense.

We find that the surgeon's problem in local anæsthesia is not single, but double. At the peripheral end, the analgesic drug is able to take care of the afferent impressions. The personality belongs to the central end, untouched by the locally effective drug. In spite of full analgesia, pain may be felt if we neglect to guard the mind. But pain must not be felt, or if ever felt, it must leave no unpleasant memories.

The degree of pain felt varies not only with the nature of the stimulus, but also with the acuteness of perception in the cortex. The same sensory impulse is not always registered as producing the same degree of pain. A stimulus usually painful may fail to produce pain at all, for example, during excitement. Yet when pain is feared or expected, the slightest sensation may be felt as severe pain. Moreover, pain can be felt by imagination alone, without any physical peripheral stimulus. Attention will always make pain worse. Diversion of attention will lessen it. Pain is subjective, and if not feigned, it is real, whether caused by a peripheral stimulus or by suggestion.

In local anæsthesia, the psychic part is often more than half the problem, and before an operation that part must be tamed and bridled. Preparation begins by suggestion. Nothing must be left undone that can strengthen confidence, and all care should be taken to keep away every unfavourable influence—and that includes ignorant and foolish nurses. A surgeon should take care what sort of people have access to the patient. The environment counts for much.

Drug Premedication: Narco-Local Anæsthesia.

For major surgical work, though preparation begins with suggestion, it does not end there. There must be premedication by drugs. Although it is customary to speak of local anæsthesia, in major surgery the term connotes something more. It really means narco-local anæsthesia.

There are indeed some surgeons who use premedication in the smallest doses possible, consistent with getting through somehow. These men use general anæsthesia to help them through a considerable proportion of the operations listed as for local anæsthesia, and it is proper that they should. There are still others who will undertake major operations with the help of suggestion alone. As I look at it, a departure from the old and tried practice of ether anæsthesia is hard to justify if it involves a nerve-shattering ordeal, a fear-sharpened, agonized apprehension during the operation, and a vivid and perhaps horrible recollection of it afterwards. It can be admitted that a gifted and experienced specialist psycho-anæsthetist could do much to remove fear and help a patient through what must, at best, be a trying time, but there are sure to be some unfortunate experiences. These gifted specialists cannot be carried in the surgeon's pocket. He is in bondage to the psycho-anæsthetist, and the scope of local anæsthesia becomes for him sadly cramped. Moreover, even when a patient has been successfully helped through, it can hardly be recalled to memory as a comfortable experience. No psycho-anæsthetist can obliterate or blunt memory. Drugs can.

One author, R. E. Farr, has contended that premedication is objectionable because it will help to cloak want of skill or incomplete success in the analgesic injections. As I view it, that does not make it objectionable, but very much the opposite. It is just what the patient would want, and it is certainly what the surgeon ought to want. Even the most skilful may fail to obtain complete success in the analgesic injections, as every man of experience in major operative work must well know, if he is honest to himself. For such contingencies it is good to have the kind protection of a sedative and memory-obliterating drug. And even Farr advises premedication for some operations.

For premedication, various drugs or combinations of drugs have been or are being tried. My experience suggests that a premedication system, or drug, which has been found suitable for use before ether administration is not necessarily suitable for local anæsthesia. It may be wholly unsatisfactory. One reason is that when ether is to be given, it does not matter much if the patient is restless and non-cooperative as a result of the premedication. The operation will not be hampered. It is far otherwise when local anæsthesia is intended. In that case, the surgeon must have a quiet and passive patient. It is there that both the barbiturate group and paraldehyde seem to be defective at present, not always, of course, but too often. It may be that the addition of morphine or some other drug to paraldehyde would overcome the difficulty, but that must be for others to try out, if they will. Two of my friends have had experience of severe respiratory depression with cyanosis after combining morphine with a barbiturate drug, an experience that has not encouraged them to continue further with the method.

With a proper system of premedication, the surgeon can get all he wants by his own efforts, and get it consistently. It was not always possible to say that, but I feel that it can be said now. Steady experimentation over many years has gradually developed a technique that can be

depended on. It is not perfect, but it is good. Acting like a lubricant, it smooths the running of the operation, giving confidence and comfort to surgeon and patient. If the instructions are followed just as they are given, without change, and if the operator is patient and gentle, there will be very few failures.

If I speak with confidence, it is because I feel that there is good firm ground for confidence. Not only have I myself watched and studied and experimented, but I have gathered the experience of friends and pupils. My own personal experience extends over eighteen years, and embraces upwards of 2,000 major operations conducted under local anæsthesia with premedication. There are, no doubt, possibilities in other drugs, but to my mind morphine and hyoscine, skilfully used, satisfy the requirements, and do it so well that, for the particular purpose in view, there appear to be, as yet, no serious competitors. Note carefully, however, my qualification—skilfully used.

Morphine is a powerful drug that every medical practitioner has learnt to command to his will and service. Its virtues, its dangers, and its general behaviour are familiar. It is at once beneficent and dangerous, and whether it is to be one or the other depends on the knowledge, intelligence, and skill of the practitioner.

Hyoscine has been less intimately known, and has a much smaller scope in general medicine than morphine. Known to be a powerful drug, it has seemed uncertain in its effect, and we find two conjectures offered as explanations. One is that the drug itself varies in strength. The other is that patients manifest a high degree of idiosyncrasy in their reaction to the drug. Either explanation comes clinically to the same thing. As far as my experience goes, neither explanation is true. That does not mean that patients do not exhibit individual variations in their reactions to the drug. Individual variations of reaction extend to all sorts of drugs, but not more to hyoscine than to morphine.

Hyoscine would not be of much use unless it were a powerful drug, but the appearance of variation in effect that has been ascribed to idiosyncrasy is not fortuitous. It goes by rule, not chance, and the effect can be predicted with at least the same accuracy as that of a dose of morphine.

The true explanation of the apparent idiosyncrasy is that the human subject reacts differently at different ages. I prefer to suspend conclusions as to the reactions in children, as my experience of cases in children is not large enough for definite statements. But in the case of adults, definite statements are possible. A man at from twenty to twenty-five years of age is between two and three times (approximately two and a half times) as tolerant as he is thirty years later, when he is aged fifty to fifty-five. The inquirer can verify all this for himself if he cares to put it patiently and thoroughly to the test, as many have done already.

If the reactions of a patient to hyoscine are predictable within reasonable limits, it becomes possible to use the drug with a safety and facility that greatly increases its value for our particular purpose.

Morphine and Hyoscine in Combination.

Morphine and hyoscine, like alcohol, ether, or chloroform, tend to induce at an early stage a condition of more or less excitement and restlessness. With morphine alone, excitement is relatively uncommon and transient. With hyoscine alone, excitement is frequent, troublesome, and prolonged. The resemblance of the combined morphine-hyoscine intoxication to that of alcohol excess is often very close, both in its early and later stages. The restless stage is more pronounced and lasts longer in some individuals than in others, but as time goes on the patient becomes quieter and inclined to sleep. At first he can easily be roused, and will exhibit a recurrence of excitement. Later on, the tendency to restlessness diminishes, and many patients will sleep through disturbances that would wake all but very heavy sleepers. Some, however, do not sleep under the premedication doses given; either they seem quite wide awake, or they lie quietly in a state of dreamy euphoria. Sometimes they may talk disconnectedly or mistake their surroundings. Occasionally the patient groans or grumbles or wails, but the surgeon of some experience always knows when he is really hurting the patient, and knows that a groan does not necessarily mean pain. Even if pain has been really felt, the memory of it is blotted out, the patient retains no unpleasant recollections, and leaves hospital enthusiastic about his operation experience.

Aims of Good Premedication.

Premedication should be so managed that there is quite certainly enough to satisfy the following three desiderata: (i) to remove fear and induce calm, (ii) to dull the acuteness of pain perception, (iii) to dim the function of memory.

It seems that in the morphine-hyoscine combination, the morphine blunts the sense of pain, while the hyoscine dims or obliterates the memory, the two combining to make the patient mentally calm and disposed to sleep. I have gained the impression clinically that morphine, when given in sufficient dosage, damps down the primary hyoscine excitability, and encourages the onset of its sedative action.

Again, premedication should be so managed that the operation is begun, not during the more excitable period, but only when the quiet and passive stage is reached.

In my early experiments with morphine and hyoscine, the doses used were not large enough to satisfy the three desiderata set down above. Not only were the doses small, but the interval between premedication injection and commencement of operation was only half an hour. Such an interval is too short. The premedication has not had time to bring the patient on to the calm, passive stage. If the analgesic injections are begun after only

half an hour, the patient is likely to be roused into excitement, restlessness, and intractability. It was found that in most patients the quiet stage begins, or has begun, about an hour after the premedication has been given. But it goes on increasing, or rather, the tendency to excitement goes on decreasing as time passes. This does not mean that a quiet patient cannot be roused into restlessness an hour or two hours after the injection. The patient must be carefully handled all the time.

Premedication Period, and Dosage of Drugs.

As we have already noted, an interval of half an hour between premedication and operation was found to be too short. As experience grew, the interval became longer. It was made an hour, an hour and a half, and then two hours. The morphine dosage was increased. The morphine went up to 33 milligrammes (half a grain) for adults between twenty and fifty years of age, but not always in a single dose. The hyoscine dosage was increased for young adults, but kept low for the older patients, as will be seen in the scheme of dosage to be presently set out. It became customary to give the larger doses of both drugs on an instalment system, so that the effect could be better controlled, and to avoid giving a knock-down dose to an unusually susceptible patient. I have known four cases of excessive reaction to half-grain doses of morphine, given in one dose. All were in women, three of them between forty-five and fifty years of age, and one was thirty-six. They went into deep slumber, with very slow respiration rates, for several hours. The thirty-six-year-old woman could be roused, but not the others. However, they were not considered to be in serious danger, and the operation was not deferred in any of them. On the other hand, as I have already remarked, with many patients half a grain of morphine is not enough to send them to sleep, even when hyoscine is added to it. From the hyoscine there have been a few cases of great restlessness, enough to make it necessary to call for a general anæsthetic, but this has occurred certainly not once in a hundred times. I must add that I have sometimes carried on when there has been a certain degree of restlessness, not enough to interfere seriously with the operation. The temperament of the surgeon counts for something in such cases.

Perhaps one out of every three or four patients receiving half a grain of morphine vomits once or twice during the first few hours after operation. Only very seldom has it occurred during the operation. It never seems to distress patients as the vomiting after ether often does. Dryness of the mouth, due to the hyoscine, is commonly complained of during the operation. The nurse who is told off to look after the patient relieves this by asking him to open his mouth, when she squeezes a little water on to his tongue from a swab held above.

At the suggestion of Dr. R. A. H. Fulton, of Dunedin, I have set out the instructions for premedication in the form of a table suitable for ready reference. There are some qualifications which cannot be included in a table, but these are added in a few words at the bottom.

Here is the table.

Appendix to Table: Warnings.

The effect of the first dose should be noted before administering the second. If the first dose produces much stronger effect than usual, withhold the second.

Under-sized individuals, whether adults or children, should receive dose corresponding to their size.

Diminish morphine in severe anæmia, shock, and cyanosis.

Diminish hyoscine in thyreotoxicosis.

Table showing Premedication Scheme.

Age in Years (inclusive).	Sex and Size.	Doses in Grains.		Doses in Milligrammes.		Time, in Hours, Before Operation.
		Morphine.	Hyoscine.	Morphine.	Hyoscine.	
11 to 13	Both sexes, ordinary size	1/6	1/150	11·0	0·4	2
14 and 15	Both sexes, ordinary size	1/4	1/100	16·0	0·65	2
16 to 19	Females and small males	1/4 1/8	1/100 —	16·0 8·0	0·65 —	2 1
16 to 19	Males, ordinary size	1/4 1/6	1/100 1/300	16·0 11·0	0·65 0·2	2 1
20 to 29	Females and small males	1/3 1/6	1/100 1/300	22·0 11·0	0·65 0·2	2 1
20 to 29	Males, ordinary size	1/3 1/6	1/100 1/150	22·0 11·0	0·65 0·4	2 1
20 to 29	Males, large, and some ordinary size	1/3 1/6 1/8	1/100 1/150 1/300	22·0 11·0 8·0	0·65 0·4 0·2	3 2 1
30 to 34	Females and small males	1/3 1/6	1/100 1/300	22·0 11·0	0·65 0·2	2 1
30 to 34	Males, ordinary size	1/3 1/6	1/100 1/150	22·0 11·0	0·65 0·3	2 1
35 to 49	Females and small males	1/3 1/6	1/100 —	22·0 11·0	0·65 —	2 1
35 to 49	Males, ordinary size	1/2	1/100	33·0	0·65	2
50 to 74	Both sexes	1/3	1/150	22·0	0·4	2
75 to 84	Both sexes	1/4	1/150	16·0	0·4	2

Patient should be carried to the theatre half an hour or more before analgesic injections begin.

Eyes should be covered, light subdued, talking and all noise should be forbidden.

Patient should lie on a soft rubber mattress on the operation table.

Quiet should be maintained, not only before, but throughout whole operation.

Further Notes on Table.

As I have explained, my premedication scheme has been a matter of growth by trial and error. From time to time I have modified it here and there, and may do so again, for though it works remarkably well, it is not put forward as something infallible and perfect. Still, I doubt if we are going to be shown the final steps to perfection by raw beginners. For the present and just at first, I recommend beginners to postpone their efforts at reconstruction, and to follow directions as they stand. And be it noted that a surgeon with twenty years' experience of surgery may be still but a raw beginner, as far as local anæsthesia is concerned.

However, the scheme is meant to be used in an intelligent way, not as a dead formula. Since the method of administration by instalments is intended to avoid injection of a knock-down dose to unusually susceptible subjects, the nurse who is to give the injections must be instructed that the second injection is not to be given until the effect of the first has been carefully noted. If it is found that the first has already produced a very strong effect, the second dose is to be withheld, because it is not necessary, and may be too much if given. Though such cases will be very rarely observed if the dosage I have recommended is employed, they may occur, and must be watched for.

Under-sized individuals, whether adults or children, should be given a proportionately smaller dose. In my premedication scheme the dose for an average-sized woman is set down as appropriate also for a small man. In severe anæmia, a reduced dose, at least of morphine, is advisable. In cases of cyanosis, the administration of morphine needs very careful consideration. In severe shock, morphine may sometimes be contraindicated, though in some cases of shock the reverse is true. In thyreotoxicosis the second dose of hyoscine is better omitted.

The third injection, set down as for large males from twenty to thirty years of age, is not invariably given. It often happens that a male, and even at times a female, patient of that age period, and perhaps of no greater size than ordinary, is not made sleepy after the two first injections. But although they are not sleepy, such patients will almost always be calm and acquiescent, and the operation can be undertaken without fear of trouble. If, however, a surgeon wishes to have his patients more inclined to somnolency, he should make it a rule to use the three injections, even in patients of ordinary size. For the third injection, the morphine may be used without the hyoscine, or with it, according to the surgeon's judgement.

PREMEDICATION IN GENERAL ANÆSTHESIA.[1]

By W. I. T. HOTTEN, M.B., Ch.M. (Sydney),
Lecturer in Anæsthetics, University of Sydney; Tutor in Anæsthetics, Royal Prince Alfred Hospital; Honorary Consulting Anæsthetist, Western Suburbs Hospital, Sydney.

ALTHOUGH research has not led to the discovery of any general anæsthetic agent comparable in value with the original inhalational anæsthetics, nitrous oxide, ether and chloroform, there is no denying the fact that enormous improvements have been made in the subsidiary treatment employed with them. The most important of these improvements is the pre-anæsthetic medication used in conjunction with these general anæsthetic agents. It is termed premedication.

The objects of premedication in general anæsthesia are as follow: (i) To inhibit the mucous and salivary secretion in the mouth and respiratory tract. (ii) To lessen apprehension and fear in the immediate pre-operative period, and the physical discomfort associated with induction of, and recovery from, general anæsthesia by the inhalational method. (iii) To facilitate the induction and maintenance of general anæsthesia.

The preliminary injection of atropine has long been employed with ether. There is no doubt of the immense benefit accruing from a preliminary dose of this drug in controlling inconvenient secretions during ether anæsthesia, and yet it is surprising how infrequently it is used.

Further, by its action upon the nerve fibres of the sweat glands, the amount of perspiration is diminished and any excessive body cooling from its evaporation is avoided.

With nitrous oxide, atropine is contraindicated because by increasing the metabolic rate the oxygen requirements are greater and there is a greater tendency for anoxæmia to occur. For the same reason it is inadvisable to use it in case of thyreotoxic goitre.

When chloroform is to be used, it is, of course, given to diminish the sensitiveness of the vagus fibres to cardio-inhibitory impulses. It is my practice to administer to adults 0·86 to 0·43 milligramme of atropine (one seventy-fifth to one one-hundred-and-fiftieth of a grain) by hypodermic injection three-quarters to one hour prior to ether anæsthesia, and 0·43 to 0·32 milligramme (one one-hundred-and-fiftieth to one two-hundredth of a grain) to children, whether other premedication is employed or not.

Of the recent advances in anæsthesia none has been more loudly acclaimed than that of premedication for the purpose of abolishing apprehension and fear prior to general anæsthesia, and of mitigating the physical discomfort associated with the induction of, and recovery from, anæsthesia by the inhalational anæsthetics. Whilst many patients submit themselves to general anæsthesia with the utmost calm and composure, there are many others

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on May 30, 1935.

who, from what they have been told by others or experienced themselves, face a general anæsthetic with fear and trepidation—surely a state of mind not conducive to a smooth induction and maintenance of anæsthesia, quite apart from the mental shock such an event may occasion. It is for this type of patient that suitable premedication with a view to securing mental calm, sleep or even unconsciousness, is invaluable.

The degree of sedation attained may vary.

There may merely be psychical sedation, whereby the patient, though awake, is composed and awaits the general anæsthetic with no undue anxiety; or light sleep may be induced from which the patient can be aroused, but subsequently will remember nothing of what has happened. If deep sedation has been produced, the patient will be quite unconscious, though he will frequently respond to painful stimuli. Premedication which aims at securing complete unconsciousness in the patient prior to general anæsthesia is termed basal narcosis.

Basal narcosis is a relatively new concept of pre-anæsthetic medication which, though highly desirable from the patient's point of view, is not always attainable with certainty with the drugs at present at our disposal when they are employed in safe dosage. This is due to the fact that the response of patients to narcotic drugs is very variable, so that a dose which may produce drowsiness or light sleep in one patient may in another result in profound narcosis with respiratory depression.

As we are not yet in a position to make dogmatic assertions as to the non-toxicity and safety of the various drugs employed for the purpose of securing true basal narcosis, it is preferable to aim at securing psychical sedation or light sleep with its associated amnesia.

The third object of premedication in general anæsthesia is to facilitate the induction and maintenance of anæsthesia. Every anæsthetist has experienced the ease with which anæsthesia can be induced in patients who are calm or who are quietened by severe illness or long period in bed. We, too, have all experienced great difficulty in inducing anæsthesia, particularly with ether given by the open method, in nervous apprehensive and vigorous individuals, and in alcoholics. In this type of patient suitable premedication not only facilitates the induction, but also insures the attainment of surgical anæsthesia with less anæsthetic agent, and the stage of maintenance is not so prone to be uneven and difficult to control.

With the gaseous anæsthetics, premedication (particularly with morphine), except in those cases in which it is specially contraindicated, is essential for smooth induction and maintenance of anæsthesia.

General Principles to be Adopted when Premedication is Employed in General Anæsthesia.

The general principles to be adopted when premedication is employed in general anæsthesia are as follow.

1. Every patient who is to have some form of premedication should be visited by the anæsthetist on the day prior to operation. To be shown a sleeping patient to whom some form of pre-anæsthetic medication has been given, and to be asked to anæsthetize the patient without awakening him or examining him is not only embarrassing, but unfair to patient and anæsthetist. During this preliminary visit, in addition to the usual routine physical examination and assessment of the anæsthetic risk, careful inquiry should be made of his previous anæsthetic experience and previous reactions to narcotic drugs. Further, careful observation should be made of the patient's temperament and mental state. From these data the anæsthetist, after consultation with the surgeon, will be enabled to decide whether some form of pre-anæsthetic medication should be employed, and also which drug will be most suitable in the particular case.

2. In arriving at the dosage of the drug to be administered, the anæsthetist must at all times, to quote the views of a surgeon:[1] (*a*) keep well within the limits of safety, (*b*) be reasonably certain that the after-effects of the drug employed for premedication will not militate against a rapid return of the patient's physiological processes to normal.

A consideration of the following factors will assist in arriving at a suitable dose: weight, sex, age, nature of pathological condition present, general health, general anæsthetic agent to be employed, temperament of the patient. Larger doses will generally have to be employed in vigorous muscular males, in alcoholics, in nervous apprehensive females, and in patients with thyreotoxicosis, particularly with gas-oxygen anæsthesia. In debilitating diseases, in the aged, in toxic states, unless premedication is contraindicated, much smaller doses will suffice. The estimation of the correct dosage depends upon assessing the relative significance of the above factors. As, however, we cannot assess the patient's reaction to the drug to be employed, there is still room for considerable error. It is better, therefore, to err on the side of an underdose. Provided the patient has not been told that he will be asleep, the anæsthetist will not be discredited if sleep does not occur, and in most cases the patient will have but a hazy recollection of the immediate pre-anæsthetic period.

3. The anæsthetist, if not administering the drug himself, should leave written instructions as to the dosage to be administered or, preferably, leave the required dose with the sister responsible for its administration. The mode of administration and time of administration should be clearly set out in writing. In the case of "Avertin" the anæsthetist should himself measure the dose and prepare the solution just prior to its administration.

4. The preliminary preparation of the patient should be completed before he or she is settled for the night. A peaceful night before operation (usually obtained only with a hypnotic, for example, veronal, 0·45 gramme or seven and a half grains, "Medinal", 0·45 gramme or seven and a half

grains, or the barbiturate to be employed for the purpose of premedication: "Nembutal", 0·09 gramme or one and a half grains, "Sodium amytal", 0·18 gramme or three grains) is essential if satisfactory results are to be obtained with premedication.

5. On the morning of the day of operation the final preparation of the patient should be completed before the administration of the drug to be used. If the patient is to be carried to the theatre, the canvas stretcher should be placed in position under him.

6. The prescribed dosage having been administered, the patient should be kept quiet, undisturbed by anxious relatives and industrious nurses. A trained and competent nurse should remain with the patient. The room should be darkened and quiet maintained in the vicinity.

7. If facilities are available for easy transport, the general anæsthesia may be induced in the patient's bed.

By careful attention to these details it is possible to secure more satisfactory results with smaller doses of the various drugs.

Drugs Employed in Premedication for Purposes of Sedation and Basal Narcosis.

The drugs employed for sedation and basal narcosis are yearly becoming more numerous, but, as I have already pointed out, dogmatic assertions as to the non-toxicity and safety of the various drugs cannot yet be made. It has therefore been my practice to aim at securing light sedation (psychical sedation) or at most light sleep, reserving basal narcosis for those selected cases in which it is called for.

In discussing the various drugs, the doses suggested (except where otherwise stated) are those which I have found adequate for the former purposes in the average healthy adult. In others the dose must be modified as already described.

The chief drugs at our disposal comprise those of the barbiturate group ("Sodium amytal", "Nembutal", "Sodium soneryl", and "Evipan sodium"), "Avertin", paraldehyde, morphine, "Omnopon" and hyoscine.

The Barbiturates.

Owing to the ingenuity of the manufacturing chemists, numerous fresh drugs of the barbiturate group have been placed in the hands of anæsthetists for the purposes of pre-anæsthetic sedation and basal narcosis. The drugs of this group of which I have had experience include "Sodium amytal", "Nembutal", "Sodium soneryl" and "Sodium evipan". There are many others, such as "Luminal", "Dial", "Sodium hebaral", and "Pernocton"; but, as I have not used them, I do not propose to discuss them.

Chemistry of the Barbiturates.[(2)]

The various barbiturates are built up from barbitone, di-ethyl, barbituric acid:

$$\begin{matrix}C_2H_5\\C_2H_5\end{matrix}>\text{"B"}$$

Where "B" stands for the barbituric nucleus and is constant, but the ethyl groups are replaceable.

If sodium is added to the "B" nucleus without disturbing the essential ring formation, the product becomes soluble. This makes for more rapid absorption from the intestine and makes it possible to inject the drug.

Thus we have:

Barbitone:

$$\begin{matrix}C_2H_5\\C_2H_5\end{matrix}>\text{"B"}$$

"Medinal" (barbitone soluble):

$$\begin{matrix}C_2H_5\\C_2H_5\end{matrix}>\text{"B"}_{Na}$$

"Sodium amytal" (sodium iso amyl-ethyl barbiturate):

$$\begin{matrix}C_5H_9\\C_2H_5\end{matrix}>\text{"B"}_{Na}$$

"Nembutal" [sodium ethyl (1-methyl butyl) barbiturate]:

$$\begin{matrix}C_4H_8(CH_3)\\C_2H_5\end{matrix}>\text{"B"}_{Na}$$

"Sodium soneryl" (sodium n-butyl-ethyl barbiturate):

$$\begin{matrix}C_4H_9\\C_2H_5\end{matrix}>\text{"B"}_{Na}$$

These are examples of the replacement of one of the ethyl groups.

"Sodium evipan" (sodium N-methyl-C-C-cyclohexenyl-methyl barbiturate):

$$\begin{matrix}C_6H_9\\CH_3\end{matrix}>\text{"B"}^{CH_3}_{Na}$$

This is an example of the replacement of both of the ethyl groups.

Derived as they are from barbitone, one would expect them to be hypnotics rather than analgesics, and such is the case unless they are employed in very large doses.

With the exception of "Sodium evipan", the doses necessary to produce unconsciousness and analgesia in man approximate too nearly to the toxic dose to warrant their routine use for this purpose.

Effects Produced by the Barbiturates.

Lundy has divided the effects produced by the barbiturates into three stages.

Stage I.—Hypnosis. The patient is drowsy and may even be asleep. He is roused, however, when moved and will frequently speak. He responds to painful stimuli. In this state he has little or no memory of events that have taken place. This is the state usually attained with the administration of barbiturates by mouth, employing a suitable small dose. There is little alteration in the blood pressure and respiration is not usually affected.

Stage II.—Inebriation. Although the patient is unconscious, he responds to painful stimuli and may be restless and uncontrollable.

Stage III.—Anæsthesia. The patient is unconscious and does not respond to painful stimuli, and there is muscular relaxation. There is a marked fall in blood pressure and the respiration becomes

extremely shallow, with consequent cyanosis. If an overdose is inadvertently administered, profound depression of circulation and of respiration occurs. These last two stages are attained when the barbiturates are administered intravenously or in large doses by mouth or in comparatively small doses in patients with an idiosyncrasy. They are now regarded as highly undesirable with "Nembutal", "Sodium amytal" and "Pernocton". However, with the introduction of "Sodium evipan" these stages may be attained with relative safety, because this drug is so rapidly detoxicated. A consideration of these facts should convince us that the barbiturates, with the exception of "Evipan", should be employed only to attain Stage I, namely, hypnosis.

"Nembutal."

I must confess a preference for "Nembutal" for the following reasons:

1. Smaller dosage is sufficient to produce the desired result.

2. Being less stable than "Sodium amytal", it is more rapidly detoxicated and therefore the hypnotic effect produced is of shorter duration. It is stated[3] that in rats with coma dosage the duration of narcosis with "Nembutal" was four and a half hours, and with "amytal" six to thirty hours.

3. There is less tendency for post-anæsthetic restlessness.

With ether anæsthesia I usually give one capsule, 0·09 gramme (one and a half grains) the night before, and 0·18 gramme (three grains) (two capsules) in the morning about one and a half hours before operation for an average healthy adult. This latter dose, however, is subject to modification, as mentioned previously. In some cases I may give 0·09 gramme (one and a half grains), but in no case have I exceeded 0·27 gramme (four and a half grains) in the morning. Under suitable conditions most patients will be found asleep, and although some appear to wake up completely on being moved to the theatre, they will invariably state afterwards that they were surprised to find they did not feel frightened and had no recollection of smelling any anæsthetic. Many, though awakened, remain drowsy and have no clear recollections.

When ether is the anæsthetic and the patient is not fully asleep, I commence induction with ethyl chloride. About 4·0 to 5·0 cubic centimetres are slowly dropped on and then ether is given. The induction of anæsthesia is usually quiet and smooth, and the amount of ether required to attain surgical anæsthesia is a little less than with patients who have not had premedication. Even with the doses I have suggested difficulty has occasionally been experienced in inducing anæsthesia owing to the shallow respiration, and during the stage of maintenance the normal rhythm and amplitude have been more or less altered, sometimes sufficiently to cause annoyance to the surgeon and anxiety to myself.

I believe that "Nembutal" and other barbiturates diminish the post-anæsthetic vomiting. Should this unpleasant sequela occur two or three times in the immediate post-operative period, the patients are usually quite unaware of having vomited.

When employing gas anæsthesia, I usually give "Nembutal", 0·09 gramme (one and a half grains), and a small dose of morphine, 0·015 gramme (one-sixth of a grain), without atropine. This can be done with safety because nitrous oxide is not a respiratory depressant unless there is an associated anoxæmia. Further, by rebreathing, the respiration can be more readily controlled.

This drug can also be administered rectally either in a suppository or in an aqueous solution. More rapid and complete absorption is attained if it is given in water (in 2·5% solution). This is a useful way of administering it to children.

The following is the dosage recommended: infants up to one year, 0·03 gramme (half a grain); infants aged from one to three years, 0·045 gramme (three-quarters of a grain).

"Sodium Amytal."

"Sodium amytal" was the first of the newer barbiturate derivatives to be employed in pre-anæsthetic medication. When first introduced, it was given intravenously to secure basal anæsthesia. The dangers and disadvantages of this technique soon became apparent and smaller doses were given to produce basal narcosis. Even this was not without its dangers. At the present time its administration is almost entirely restricted to the oral and rectal route, and the general consensus of opinion among anæsthetists is that psychical sedation or light sleep only should be sought. I have used "Sodium amytal" for this purpose and still use it when "Nembutal" is not available. Its effects are very similar to those produced by "Nembutal". In small dosage restlessness and excitement have appeared to be more common during recovery than with "Nembutal".

When ether anæsthesia is to be employed, I give "Sodium amytal", 0·18 gramme (three grains) the night before and 0·24 to 0·36 gramme (four to six grains) the following morning, about one and a half to two hours prior to operation. For vigorous muscular individuals who are very apprehensive, the morning dose may be increased to 0·45 gramme (seven and a half grains).

Induction is started with ethyl chloride if the patient is not asleep as with "Nembutal". Prior to gas anæsthesia "Sodium amytal" is combined with morphine—"Sodium amytal", 0·18 gramme (three grains), is given two hours and morphine, 0·015 gramme (one-sixth of a grain), one hour prior to operation.

Larger doses by mouth are advocated by some—up to 0·015 gramme per kilogram (one and a half grains per stone) of body weight. I have had no experience with such doses. I personally do not think it justifiable to administer large doses of these narcotics, because, once the dose has been administered, reduction of the effect is beyond the power of the anæsthetist.

It is far better to use very much smaller dosage of a solid narcotic to secure psychical sedation or

light sleep and to rely on the inhalational anæsthetics, with their readily controllable dosage, to secure surgical anæsthesia.

Lundy and Tovell[4] are convinced that oral or rectal administration of either "Sodium amytal" or "Nembutal" in sufficient dosage to produce a hypnotic effect, together with morphine, is the most satisfactory use for the barbiturates. At the Mayo Clinic they employ "Nembutal", 0·09 gramme (one and a half grains), at bedtime the night before operation, repeated again in the morning an hour before operation, together with a hypodermic injection of morphine, 0·015 gramme (one-sixth of a grain), and atropine, 0·43 milligramme (one one-hundred-and-fiftieth of a grain).

"Sodium Soneryl."

Chemically "Sodium soneryl" resembles "Nembutal", but is stated to be less toxic. Launoy and Contrère,[5] taking veronal as unity, have found that the relative toxicity for "soneryl" is 4·7, "Amytal" 10·1, and "Nembutal" 10·1. It would therefore appear to be a very suitable form in which to administer a barbiturate prior to anæsthesia.

It is administered orally in capsules containing 0·15 gramme each. The dosage I employ is that recommended by Birdsall[6] for a patient weighing less than 63 kilograms (ten stone), 0·6 gramme; for a patient between 63 kilograms (ten stone) and 75·6 kilograms (twelve stone), 0·75 gramme. The capsules are given one and a half hours before operation. With this dosage, although a small percentage of the patients have been asleep, the majority were only drowsy. In all the patients the memory of events in the pre-anæsthetic period has been very vague. No respiratory depression has occurred, and induction and maintenance of anæsthesia have proceeded quite smoothly. Nothing untoward has occurred in the post-anæsthetic period.

From the experience I have had to date, "Sodium soneryl" in the doses recommended seems to be very suitable for the purpose of securing a state of mental calm or light sleep with fairly satisfactory amnesia.

"Sodium Evipan."

"Sodium evipan" is one of the most recent additions to this group of drugs. Animal experiments and clinical use indicate that this drug is of low toxicity and of high therapeutic effect, and is rapidly detoxicated.

It is chiefly employed to produce full anæsthesia for short operations in which complete relaxation is not essential. On occasions, however, it is used to produce basal narcosis prior to gas-oxygen or ether anæsthesia, for example, when the drug for premedication purposes has to be administered intravenously.

The technique is as follows: A 10% solution is prepared by dissolving one gramme of "Sodium evipan" with 10 cubic centimetres of distilled water. With the patient still in bed this solution is injected into the median cephalic vein of the arm.

The dosage is regulated during injection by the exact observation of the patient. One method is to ask the patient to count whilst maintaining a constant rate of injection (one cubic centimetre per fifteen seconds). By this means the exact amount required to produce sleep is estimated. As much again as was required to produce sleep is injected before withdrawing the needle. The usual amount to be injected will be six to nine cubic centimetres. The patient is then quickly transferred to the theatre and the inhalational anæsthetic (gas-oxygen or ether) is given.

With gas-oxygen I have found it possible to induce anæsthesia quietly and smoothly, and the percentage of oxygen can be greatly increased up to 15% to 20%. With ether some patients commence to struggle and cough as soon as the administration begins.

Contraindications to Use of the Barbiturates.

These drugs and others of the barbiturate group should not be employed:

1. For patients with defective renal function due to acute or chronic nephritis. In this group might be included patients with a chronic cystitis and latent pyelitis in whom there is an increased susceptibility to the barbiturates, even though the blood urea is but little raised.
2. For patients with defective liver function. A history of cirrhosis, jaundice or glycosuria may suggest this.
3. For patients manifesting signs of toxæmia due to some existing disease.
4. For patients with myocardial disease.
5. In senility with visceral degeneration.

"Avertin" and Paraldehyde.

"Avertin" and paraldehyde are principally used when deep sedation or basal narcosis is called for. They are both administered by the rectum. For the past two years I have relied upon paraldehyde for these purposes.

"Avertin."

Although some anæsthetists appear to be still satisfied as to the safety of rectally administered "Avertin" for purposes of basal narcosis, many of us, after experience of it in private and hospital anæsthetic practice, are not inclined to regard it so favourably. It is a far more powerful drug than paraldehyde, and extreme care must be taken in measuring the dose and preparing the solution. The anæsthetist must attend to this himself if he intends using the drug.

I employed "Avertin" in a dosage ranging from 0·07 to 0·11 gramme per kilogram of body weight. If the solution was run in very slowly, the patient often fell asleep before the injection was completed. Two patients, I recall, had sneezed violently until the inhalational anæsthetic was given. We found that a few patients became restless and uncooperative while the solution was being run in, whilst I saw two or three others who became highly excitable. This was unusual, as most patients fell

asleep quickly and quietly. This sleep became deeper, until after twenty-five minutes most patients were unconscious, although they reacted to painful stimuli.

The respirations became shallow and quiet. Pallor became apparent owing to drop in blood pressure varying from 5 to 20 millimetres of mercury. Faint cyanosis was occasionally observed, even in the presence of an unobstructed airway. The airway must be carefully watched, as the relaxation of muscles and dropping back of the jaws and tongue may cause a mechanical obstruction to respiration. It is imperative for the anæsthetist to remain with the patient on this account, unless he is certain there is someone competent to recognize and correct any mechanical cause of asphyxia who can be left in charge of the patient.

The respiration gave me most cause for anxiety. Should cyanosis become marked in the presence of an unobstructed airway, the following measures must be adopted without delay:

1. An intravenous and/or intramuscular injection of two to three cubic centimetres of "Coramine".

2. Administration (by endotracheal route if necessary) of 5% to 10% carbon dioxide and oxygen.

3. High rectal irrigation with warm hypertonic sodium thiosulphate.

4. Ephedrine, 0·045 to 0·09 gramme (three-quarters to one and a half grains), by hypodermic injection is stated to shorten the action of "Avertin" and therefore may be tried.

Every anæsthetist using "Avertin" should have these drugs and "Carbogen" as part of the necessary equipment.

I have used nitrous oxide, ethylene and ether after "Avertin" narcosis. On going through some of the records at the Royal Prince Alfred Hospital I found records of two patients to whom "Avertin" followed by chloroform was given. This combination is not recommended. The amount of inhalational anæsthetic required is greatly reduced.

When ether is given by the open method induction is often prolonged on account of the shallow breathing and of the tendency to cough if any attempt is made to push the anæsthetic.

In the post-operative period the patients often showed no signs of returning consciousness for two to five hours. For some time after this they remained drowsy. They required to be watched for a longer period, owing to the tendency for the tongue to drop back.

Prolonged unconsciousness has been met with in three patients to whom "Avertin" was administered.

In four patients (one female and three males) there has been extreme restlessness which required an injection of morphine. Even when consciousness does not seem to have been lost, owing to too small a dose or failure to retain the whole of the dose administered, there is an amnesia lasting from the time of injection of "Avertin" for a variable period after the operation.

"Avertin" has been strongly advocated in cases of thyreotoxicosis as a preliminary to local or general anæsthesia. Keynes[7] has reported excellent results by using this drug; in 220 cases the immediate operative mortality was less than 1%. I have gone into the notes of 370 consecutive patients operated on for thyreotoxicosis at the Royal Prince Alfred Hospital. In this series there were 21 deaths (including one death from acute tetany).

Of the 370 patients, 94 were given "Avertin" followed by ethylene (45), ether (24), local anæsthesia (21), nitrous oxide (1), chloroform (2) and one not stated. There were six deaths in the list of those to whom "Avertin" was given, and four of these died within thirty-six hours without regaining consciousness.

With "Avertin" and local anæsthesia three deaths occurred; two of the patients did not regain consciousness.

"Avertin" and ether were followed by two deaths, "Avertin" and ethylene by one death.

On the other hand, paraldehyde, either alone (17) or with morphine and hyoscine (6) or with morphine (68), was given to 91 patients with only three deaths.

Gilbert Brown quotes a death following "Avertin" and ethylene, and in this instance before the operation was begun.

"Avertin" narcosis with local infiltration anæsthesia is a very useful combination for intracranial surgery, as the congestion of the cerebral vessels is markedly lessened. Where it has been employed it has often been necessary to adopt measures to restrain the patient, particularly towards the end of the operation.

Since "Avertin" is a brain stem narcotic,[8] its use when there is likely to be interference in the region of the medulla is open to criticism.

Paraldehyde.

Although paraldehyde can be given orally, the taste and smell are so unpleasant that it is better administered by the rectum.

As compared with "Avertin", paraldehyde does not produce the same degree of narcosis, nor has it the same depressant effect on the circulation and respiration.[9]

I usually employ paraldehyde in a dose of 0·47 to 0·62 cubic centimetres per kilogram (three-quarters to one fluid drachm per stone) of body weight, with a maximum dose of 40·0 cubic centimetres (ten fluid drachms).

With healthy, vigorous, muscular adults, and alcoholics and patients with thyreotoxicosis I give, in addition, morphine, 0·25 milligramme per kilogram (one-fortieth of a grain per stone) of body weight (approximately), with a maximum dose of 0·015 gramme (one-quarter of a grain).

If ether is the anæsthetic agent to be used, atropine, 0·8 to 0·3 milligramme (one seventy-fifth to one two-hundredth of a grain), is given also.

The paraldehyde may be mixed with olive oil, milk or normal saline solution. Although less soluble in normal saline solution (one in ten), it is preferable to use normal saline solution, because it allows of more rapid and complete absorption of the paraldehyde.

The estimated dose of paraldehyde is added to the necessary amount of normal saline solution (ten cubic centimetres of normal saline solution for each cubic centimetre of paraldehyde, or 10 drachms for each drachm).

The solution is conveniently prepared in a bottle of suitable size which permits of thorough mixing by shaking. If a cork pierced by two glass tubes is fitted into the bottle, the solution may be slowly run into the rectum by inverting the bottle and attaching the short tube to the catheter. By this means the odour of the paraldehyde is prevented from permeating the room.

It is imperative that the paraldehyde be perfectly pure, for, as Hutchinson has pointed out,[10] serious results have followed the use of paraldehyde which has undergone oxidation through keeping it in improperly stoppered bottles. When oxidation takes place in paraldehyde, glacial acetic acid is produced according to the formula $CH_3CHO + O = CH_3COOH$. Once a trace of this has been formed, it acts as a catalyst, which may finally lead to a conversion of 75% of the paraldehyde into acid. Hutchinson quotes a case in which this conversion was responsible for great pain after the injection, and later for considerable sloughing of the rectal mucous membrane.

Administration of Paraldehyde.—If it has been decided to use morphine, this is given about one and a half hours prior to the operation. Not less than one and a quarter hours before operation the paraldehyde in normal saline solution is administered.

With the patient on his left side and with the buttocks raised, a well lubricated catheter is carefully introduced up the rectum. The paraldehyde in saline solution is then very slowly run into the rectum, some ten minutes being taken over the process. The catheter is clipped and left in position, the legs being kept together. If these precautions are not taken, some of the solution may be returned, in which case the full dose will not be absorbed, with the result that the patient may not sleep, and in rare instances there may be excitement.

The patient may be drowsy or even asleep by the time the catheter is disconnected.

About 95% of the patients are usually sleeping soundly by the time the general anæsthetic is commenced. A few patients will be awakened as soon as preparations are made for their transport to the theatre. This possibility can always be obviated by starting the anæsthetic with the patient asleep in bed; this can be readily done if suitable transport facilities are available.

However, whether asleep or not, most patients will remember nothing of what happened after the injection. I have made careful inquiry on this point.

After the operation the patients are usually quiet and may sleep for some hours. As with "Avertin", they must be watched in case of respiratory obstruction. After awakening and taking some fluid, they will remain drowsy or even sleep for a further period. Their memory of events for the eight to ten hours after operation is very vague, even though they have awakened, taken fluids and spoken to nurses and relatives.

I have met with very few in whom there has been any post-operative excitement. I have made special inquiries on this point from the sisters in the surgical wards at the Royal Prince Alfred Hospital, and they state that it has been extremely rare for patients who have had paraldehyde premedication to cause any worry through being excitable or restless. It is also their opinion that the incidence of the post-operative vomiting is slightly less.

Paraldehyde premedication thus administered has proved very useful in very nervous patients, in children, and in cases of thyreotoxicosis.

Morphine, "Omnopon" and Hyoscine.

Morphine.

I have left morphine till last because I employ it with the gaseous anæsthetics to facilitate the induction and maintenance of anæsthesia.

Whilst soothing pain and producing euphoria, it is not so effective as the barbiturates in allaying fear.[11] Before gas anæsthesia it is, except in the presence of special contraindications, for example, extremes of age, grave toxæmias, and patients who have an idiosyncrasy to morphine in the form of severe vomiting, extremely useful and, one might say, indispensable. In addition to its soothing effect by lowering the metabolic rate and lessening the demand for oxygen, surgical anæsthesia can be attained without the same tendency to anoxæmia. Its depressant effect on the respiratory centre is more readily controlled, since by rebreathing the carbon dioxide percentage in the gaseous mixture may be adjusted to meet requirements.

With the gaseous anæsthetics I usually give morphine, 0·01 to 0·015 gramme (one-sixth to one-quarter of a grain), without atropine one hour before operation.

In particularly vigorous males I have given morphine, 0·015 gramme (one-quarter of a grain), one and a half hours before operation, and if they are not sleeping an hour later, another injection of morphine, 0·008 gramme (one-eighth of a grain). No difficulty has been experienced from respiratory depression.

Before ether administered by the open method morphine, unless given in small doses, tends to delay induction in some cases on account of the shallowness of respiration. However, sometimes I think it may be used with advantage, particularly in strong muscular men and alcoholics. Morphine, 0·008 to 0·01 gramme (one-eighth to one-sixth of a grain), and atropine, 0·8 to 0·5 milligramme (one seventy-fifth to one one-hundred-and-twentieth of a grain),

are given half to one hour before operation. This combination has a profound inhibitory effect on salivary and mucous secretion which is so frequently a potent cause of mechanical obstruction to free respiration, with its train of immediate and delayed sequelæ. Induction is usually smoother and surgical anæsthesia is more rapidly attained without the use of so much ether.

Before chloroform I do not think morphine should ever be employed.

"Omnopon."

"Omnopon" is a mixture of the hydrochlorides of the alkaloids of opium. It is reputed to be less depressing to the respiration than morphine, and less likely to produce vomiting.

The usual dose I employ is 0·02 gramme (one-third of a grain) by hypodermic injection half to one hour prior to gas-oxygen anæsthesia.

Some anæsthetists employ "Omnopon", 0·02 gramme (one-third of a grain), combined with lævorotatory hyoscine hydrobromide, 0·2 to 0·4 milligramme (one three-hundredth to one one-hundred-and-fiftieth of a grain).

As previously mentioned, morphine is sometimes used in conjunction with the barbiturates. To nervous patients it is sometimes an advantage to give "Nembutal", 0·09 gramme (one and a half grains), by mouth an hour and a half prior to operation, followed in half an hour by morphine, 0·008 to 0·01 gramme (one-eighth to one-sixth of a grain), hypodermically prior to gas-oxygen anæsthesia.

Morphine is used by some anæsthetists with "Avertin" and "Sodium evipan" to secure basal anæsthesia. I believe that these combinations, especially in full doses, are likely to produce grave respiratory depression and therefore should not be used.

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THE USE OF "NEMBUTAL" IN CHILDBIRTH.

By W. J. RAWLINGS, M.B., B.S. (Melbourne), M.C.O.G., D.G.O. (Dublin),
Corowa, New South Wales.

THIS communication is a review of the oral administration of "Nembutal" in midwifery, as an analgesic, during my period as resident obstetric surgeon of Saint Mary's Hospital, Manchester, from February, 1933, to February, 1934.

"Nembutal" (Abbott), a barbiturate, was given in capsules of 0·09 gramme (one and a half grains), hereafter designated as one capsule. In a few instances the capsules were vomited, partially digested, within half an hour; in such cases further dosage was preceded by a small drink of bicarbonate of soda in water. This is said to expedite absorption.

The number of cases in the series was 240, practically one-tenth of the total maternity admissions. This apparent selection of cases was governed solely by the reaction of the patient to labour. If the patient was restless, if the uterine contractions were painful, or if it seemed that labour would be long and that a sedative would be useful to conserve the patient's strength, "Nembutal" was administered. If, however, labour was so far advanced or was proceeding comfortably without distressing the patient, she carried on naturally or had a "head-over-perineum" anæsthetic.

The method of administration altered during the period from being a routine measure to a condition of flux, in which judgement in dosage was used rather than a fixed rule. Thus the initial method was to give "Nembutal", two capsules, with chloral hydrate, 1·2 grammes (twenty grains), with repeated doses of the same, similar to the method of O'Sullivan and Craner. This method I did not like. Just as in a general anæsthetic no two patients react alike, so with a fixed routine the dosage is sometimes insufficient, sometimes the reverse. In general I considered that the uterine contractions tended to diminish in intensity, certainly in frequency; if administration was commenced early, the patient tended to fall out of labour.

There were ten cases in this series.

From haphazard use the method was adopted of an initial dose of "Nembutal", two capsules, followed by an hourly review of the case. At the end of the first hour "Nembutal" is again given in doses of two capsules, one capsule, or none, depending on the restlessness of the patient, her response to questioning, her response to uterine contractions, and mainly on her condition between uterine contractions. If the patient is "well under", she dozes to sleep between contractions, will respond to irritating stimuli, and will rouse herself, too, but will not intelligently answer questions. If she is not so well under, dosage is given as stated and the patient is usually easily persuaded to swallow the capsules.

In considering when to commence administration, I fell back on my experience of the Gwathmey method of giving ether by the rectum (which method I still consider very good). The patient must be in regular labour and must have regular uterine contractions at intervals of at least three minutes, each contraction lasting thirty to forty seconds. If this period of labour is worrying the patient, "Nembutal" is now commenced, irrespective of her parity or of the dilatation of the cervix.

Of patients requiring a second dose of two capsules there were twenty, approximately 8%. Twelve of these second doses were given at the end of the first hour; this is practically equivalent to the method advocated by some writers—an initial dose of four capsules. Six patients had the second capsule at later intervals, one patient had it given in between single capsule doses, and one case was of special interest.

This patient, number 971, was a two *para*, aged thirty-three years; she had at two hours two capsules, at four hours two capsules, at six hours two capsules, at eight hours one capsule. She delivered herself by natural forces of a 3·54 kilogram (seven pound fourteen ounce) baby at fourteen and a half hours. This patient, in spite of taking seven capsules within six hours, was restless throughout, but had complete amnesia.

Naturally the amounts given vary considerably, and I propose dividing the cases into groups according as the patients received a single dose, two, three, four, five or six doses.

The One-Dose Group.

In the first group, that of patients who received a single dose of one or two capsules, there are ninety-four cases, which is larger than I anticipated in starting this report; and in this series lies one of the fallacies of dosage and administration. Many of these patients were *primiparæ*, normal in obstetrical respects, who carried on quietly until well into the second stage of labour. When they now became restless they were given "Nembutal", and in all instances the patient was delivered before more was required or could have been given with effect. These cases were interesting in that many patients became more amenable to suggestions and instructions; most patients certainly had an incomplete memory of the second stage, but the effect as regards the nursing staff often were not so helpful. In all cases the patient immediately after the third stage dropped off into a deep sleep. The conclusion thus arises that "Nembutal", if given in comparatively small doses, requires earlier and more prolonged administration.

The Two-Dose Group.

The two-dose group numbered sixty-nine cases, nearly one-third of the total. Of these, thirty-eight patients had two capsules followed by one capsule at the end of one hour. Sixteen patients had the second dose at the end of the second hour, the remainder at longer intervals. Eight patients of this group were included in the double two series. Of these it is interesting to note Number 60.

This patient received the capsules with an interval of eight hours, namely, forty-one hours two capsules, forty-nine hours two capsules, with natural delivery at sixty hours. In this case the effect was good in both quietness and amnesia.

Also Number 487, a second *para*, with normal pelvic measurements, whose previous delivery was by Cæsarean section, came into labour, the fœtus lying in the right occipito-posterior position, and continued quietly until twenty-four hours, when she became restless and was given two capsules of "Nembutal"; at twenty-five hours two more capsules were given with good effect. At thirty hours, as there had been no advancement of the presenting part for some time, the labour was terminated by manual rotation of the occiput and low forceps extraction of a live baby weighing 3·87 kilograms (eight pounds eight ounces).

The Three-Dose Group.

The three-dose group numbered thirty-nine cases. In the majority the second dose was given in one to one and a half hours after the first dose; in the remainder it was given at the end of two hours. The third dose of one capsule generally became necessary after an interval of two to three hours.

The Four-Dose Group.

The four-dose group numbered seventeen cases and practically followed the previous series in time spacing. The average intervals were one to one and a half hours between the first and second doses, two to three hours between the second and third doses, three to four hours between the third and fourth doses. Of this group Number 147 is typical.

This patient was given "Nembutal" as follows: at twenty-five hours two capsules, at twenty-six hours one capsule, at twenty-nine hours one capsule, at thirty-four hours one capsule; and labour terminated in natural delivery at thirty-six hours.

Number 281 was similar; the patient had "Nembutal", two capsules, at eight hours, with one capsule repeated at each of ten hours, twelve hours and sixteen hours; the labour terminated in natural delivery at twenty-two hours.

Number 2187 was a *primipara* with a history of early rupture of the membranes, irregular painful uterine contractions for four days, and the fœtus lying in the occipito-posterior position. In hospital the patient had an active labour of thirty-six hours, during which time the administration of "Nembutal" was as follows: sixteen hours before delivery two capsules, fifteen hours before delivery one capsule, twelve hours before delivery one capsule, seven hours before delivery one capsule; and the labour terminated in manual rotation of the occiput and forceps delivery of a living baby weighing 3·52 kilograms (eight pounds seven ounces).

Number 1522 is of interest from the point of rapid repeat dosage and effect.

The patient had "Nembutal", two capsules at fourteen hours, with one capsule at fifteen and a half hours, one at sixteen and a half hours, and one at eighteen hours after the onset of labour. The effect was very good; the patient became drowsy and then stuporose, but the uterus continued to contract well and the presenting part advanced until twenty-nine hours, when the patient roused herself and had a natural delivery at thirty hours of a 3·62 kilogram (eight pound) living baby. The mother's pelvic measurements were: interspinous diameter 25·6 centimetres (ten and a quarter inches), intercristal diameter 26·8 centimetres (ten and three-quarter inches), and the diagonal conjugate 10·6 centimetres (four and a quarter inches).

Number 2498 was an eleven parous patient admitted to hospital after seven hours' labour with the fœtus lying transversely in the uterus. A general anæsthetic was

administered immediately; external cephalic version was performed. When the patient awakened from the anæsthetic she became very noisy and restless, so "Nembutal" was given, two capsules at nine hours, with one capsule at ten hours, one at eleven hours, and one at twelve hours; and natural delivery resulted at fourteen hours.

This patient was very difficult to quieten, and on reviewing the case I think larger initial doses could have been given with advantage.

The Five-Dose Group.

The five-dose group contains nine cases. Out of the chaos of time dosage tables I have been unable to evolve a routine method, as the variation is considerable. Thus the shortest period was in Case Number 933. This patient had six capsules within eight hours, whereas Number 748 had six capsules over a period of twenty-six hours. The nearest approach to a desired scheme would be Number 1528.

This patient, a *primipara*, came into labour at term with the fœtus in the occipito-posterior position. After nine hours' labour she had two capsules of "Nembutal", at eleven hours one capsule, at twelve hours one capsule, at seventeen hours one capsule, and at twenty-two hours two capsules; she had good analgesia throughout and "worked" well with contractions, dozing to sleep between them. At twenty-six hours, as the caput had been "just visible" for three hours with no advancement, a general anæsthetic was administered and the occiput was manually rotated from the transverse to the anterior pelvic diameter. The patient was then left to carry on and delivered herself at thirty hours of a 3·17 kilogram (seven pound) baby, which was rather asphyxiated, but revived comfortably.

In this case, taking nine hours as zero, the time-table is: zero two capsules, two hours one capsule, three hours one capsule, eight hours one capsule, thirteen hours one capsule, seventeen hours rotation of the occiput, twenty-one hours delivery.

Similarly, Number 748, a *primipara*, aged thirty-four years, was in moderate labour until thirty-five hours, when she had two capsules of "Nembutal"; at forty hours she had one capsule, at forty-four hours two capsules, at fifty hours one capsule, at sixty-one hours one capsule. At sixty-eight hours a general anæsthetic was administered, the occiput was manually rotated to the anterior pelvic diameter, and by forceps extraction a living baby weighing 3·88 kilograms (eight pounds eight ounces) was delivered.

Note that the third dose was two capsules.

Number 1389 was a *primipara*. The fœtal lie was occipito-posterior. The patient was admitted to hospital on account of delayed first stage of labour. On admission at sixty hours she was given morphine, 0·016 gramme (a quarter of a grain), which was followed by a short sleep. When the patient awakened she became restless and was given "Nembutal", two capsules at sixty-seven hours, two capsules at seventy hours, one capsule at seventy-two hours, one capsule at seventy-four hours, one capsule at seventy-seven hours, and at eighty hours she had natural delivery of a living baby weighing 3·66 kilograms (eight pounds two ounces); this was followed by a deep restful sleep of twelve hours.

Number 2225 was a *primipara* with the following pelvic measurements: interspinous 25·0 centimetres (ten inches), intercristal 25·6 centimetres (ten and a quarter inches), diagonal conjugate 10·0 centimetres (four inches). The first stage of labour came on quite strongly, and at seven hours "Nembutal", two capsules, was given, at nine hours one capsule was given, at ten and a half hours one capsule, at thirteen hours one capsule, and at seventeen hours one capsule. The effect was very good, but no more was given, as I wanted the patient to have full use of the secondary forces of labour. At twenty-four hours the membranes had been ruptured for six hours, the *os cervicis* was almost fully dilated for twelve hours and the vertex was impacted in the brim of the pelvis. She was diagnosed as exemplifying the so-called "failed trial" of labour. Cæsarean section was performed under ether anæsthesia for a living baby weighing 3·5 kilograms (seven pounds twelve ounces).

The Six-Dose Group.

In the six-dose group there are only three cases, but each one is worthy of consideration.

Number 827 was a *primipara* with a diagonal conjugate of 10·6 centimetres (four and a quarter inches). Eleven hours after the onset of labour "Nembutal", two capsules, was given, and also at thirteen hours, fifteen hours, eighteen hours, and twenty-five hours. Natural delivery of a living baby weighing 3·14 kilograms (six pounds twelve ounces) occurred at twenty-seven hours.

In this case seven capsules were given at almost regular three-hourly intervals.

Case Number 1196, from the viewpoint of general all-round effect, was perhaps the best of all.

The patient was a *primipara* with a round pelvis and a diagonal conjugate of 10·6 centimetres (four and a quarter inches). After seventeen hours' labour she was given "Nembutal", two capsules; half an hour later the patient vomited; at eighteen hours the patient was still restless, so two capsules were given again. The effect now was much better, and one capsule was repeated at twenty hours, at twenty-three hours, at twenty-seven hours, and at thirty-two hours. Natural delivery took place at thirty-four hours of a baby weighing 2·74 kilograms (six pounds four ounces).

The amnesic effect in this instance was very good, as I saw the patient at 11 p.m. (seventeen hours in the time dosage table) and ordered the first dose of "Nembutal"; labour continued with the patient "well under", and she was delivered at 4 p.m. the next day. The patient then slept until luncheon time the following day, when she awakened feeling refreshed and well. The last remembrance was "when that fellow the R.O.S. came at night and ordered the pills". The total dosage was eight capsules over a period of fifteen hours.

Number 1322 was a case which caused me to think deeply and carefully watch future cases.

This patient was a *primipara*, aged eighteen years, admitted in labour, the fœtus lying in the left occipito-posterior position. At twenty hours "Nembutal", two capsules, was given, followed by one capsule at twenty-one and a half hours and one capsule at twenty-four hours. The patient now had good strong contractions, was pushing well and was analgesic, though restless. At twenty-six hours there was slow advancement for the strength of the contractions; on examination *per vaginam* the *os cervicis* was three-quarters dilated, the vertex was in the transverse pelvic diameter with a thick anterior lip of the cervix. A short general anæsthetic was administered, under which the occiput was rotated to the anterior pelvic diameter and the patient left to deliver herself. At twenty-eight hours the patient became very restless and noisy and "Nembutal", one capsule, was given; this had little effect and was repeated at twenty-nine hours with better effect; one capsule was given again at thirty-two hours. The patient was now nicely analgesic and working well since restarting "Nembutal" until thirty-five hours, when she became apnœic and cyanotic, though the pulse was regular, 84 per minute, of good volume and tension; the pupils were not strongly contracted. A carbon dioxide mixture was applied; the respirations immediately deepened and became normal. Shortly afterwards the patient again became apnœic and required further application of carbon dioxide gas. At thirty-six hours I was not happy with the

patient's breathing, so a very short anæsthetic sufficed for a head-on-perineum forceps extraction of a 3·85 kilogram (eight pound seven ounce) baby, which cried immediately. Half an hour later the placenta was expressed, followed by a fair amount of loss. Pituitrin and "Femergin" contracted the uterus and controlled the hæmorrhage. At thirty-seven hours the respirations were still shallow and were stimulated by a further application of carbon dioxide gas, though the pulse was quite steady and strong. At thirty-seven and a half hours the patient was conscious to painful stimuli (pin prick). At thirty-eight hours the patient suddenly collapsed, both pulse and respirations; artificial respiration was applied, with an injection of "Cardiazol"; the patient readily responded, especially to an intravenous injection of glucose, 500 cubic centimetres of 5% strength. At forty-two hours the patient was much improved. At fifty-six hours the patient was conscious and talking, of quite good condition, as though she had had no previous troubles; and so on to a normal puerperium. The total dosage was seven capsules over a period of twelve hours.

Following on this rather disquieting apnœic case I particularly watched albuminuric and toxæmic patients, and since then have administered "Nembutal" to twenty definite albuminuric patients and to one with eclampsia. In none of these was there any untoward effect. The average dose was three capsules, that is, two capsules and one. Patient Number 390 had six capsules within ten hours, Number 1528 six capsules within fifteen hours.

Failed Forceps Before Arrival.

There were six cases in the series of "failed forceps before arrival". This number is small, as the results were not encouraging; the patients, after their strenuous efforts and after one or more anæsthetics before arrival at hospital, were not good subjects. The sister and I agreed that "Nembutal" is useful in these cases, but morphine or morphine-scopolamine gives better results.

Cardiac Cases.

There were two cardiac cases only.

Number 281 was a *primipara* with mitral stenosis and a red blood corpuscle count of 2,648,000 per cubic millimetre; she was unusual for a cardiac patient in that her labour was slow (the full twenty-four hours) and in that she required analgesia. The total dosage was five capsules, with good effect.

Forceps Delivery.

Cases terminating in forceps delivery totalled 46 cases (18%). In this group one must consider: (*a*) analgesia was required because labour was long and painful, (*b*) most of these cases were occipito-posterior which did not rotate, (*c*) the maternal pelvis was generally below normal measurements. All except one were low forceps applications. In my opinion "Nembutal" did not delay labour and thus did not raise the forceps rate above the average. The large incidence of occipito-posterior positions in Lancashire and the failure to rotate always interested me whilst I was at Saint Mary's Hospital, though I am not discussing it now.

Effect on the Baby.

In my opinion "Nembutal" does not adversely affect the baby; the fœtal rate and rhythm are maintained as in non-analgesic cases. My confidence is best illustrated by Number 1483.

In this case, that of a *primipara*, at the onset of labour the fœtal heart sounds were 200 per minute and irregular, a rather disquieting state of affairs. "Nembutal" was administered in total dosage of six capsules over a period of twenty-two hours with good effect to the patient; the fœtal heart sounds remained the same, irregular and rapid, throughout the whole labour. The baby was born by natural forces and cried lustily.

Sixteen stillbirths were recorded. Of this group nine were inevitable; on admission of the patients to hospital the fœtal heart sounds were not audible owing to prematurity, monsters or previous application of forceps. The case histories of the remaining seven were as follow:

Number 1910 had two medicinal inductions to start labour; at sixteen hours two capsules of "Nembutal" were given with good effect. At nineteen hours the caput was visible; half an hour later the fœtal heart sounds rapidly became inaudible. Despite immediate episiotomy and low forceps extraction the child was stillborn.

Number 1935, a *primipara*, with the fœtus lying in the right occipito-posterior position, had two capsules of "Nembutal" at eighteen hours and one capsule at nineteen hours. At thirty-six hours low forceps application was carried out, the vertex having rotated itself. The child was stillborn.

Number 234, a second *para*, had two capsules of "Nembutal" at sixteen hours and one capsule at eighteen hours. At twenty-two hours natural delivery of a stillborn baby weighing 2·52 kilograms (five pounds two ounces) occurred.

Number 2171 was an eleven *para* and had a heavy cloud of albumin in the urine. During labour she had a total dosage of three capsules, and the labour was terminated by breech extraction of a 4·2 kilogram (nine pound four ounce) baby, which was stillborn.

Number 2365, a primiparous patient, commenced labour by a medicinal induction; at thirty-two hours she had two capsules of "Nembutal", at thirty-six hours natural delivery of a 2·268 kilogram (five pound) stillborn baby occurred.

Number 2514, a third *para*, had a past history that the first child was stillborn; the second pregnancy resulted in a macerated fœtus. In this, the third pregnancy, she had a medicinal induction followed by a bougie induction; labour carried on uneventfully, and at eleven hours she had "Nembutal", two capsules; at twelve hours natural delivery of a 3·17 kilogram (seven pound) stillborn baby occurred.

Number 2142 was admitted in labour with the fœtus presenting by the shoulder. An easy manipulation corrected the lie of the child. One capsule of "Nembutal" was administered and natural forces delivered a stillborn baby weighing 2·38 kilograms (five pounds four ounces).

It is interesting to note that five of the above seven cases were complicated by malpresentation or by medicinal induction of labour.

Cases of fœtal distress and asphyxia were five, of which the following are summaries.

Number 216. This patient had a small pelvis necessitating medicinal induction at thirty-eight weeks. At eight hours she had two capsules of "Nembutal", at ten hours one capsule; at twelve hours fœtal distress was relieved by low forceps extraction of a living baby.

Number 912. The patient in this case had been in labour four days when the fœtus showed signs of distress. Manual rotation of the occiput from the posterior position with forceps extraction resulted in a live baby.

In Case Number 1528 five doses of "Nembutal" were distributed over a period of twenty-one hours with good effect. The baby suffered from asphyxia, but responded and was born alive.

Number 1974 was a primiparous patient who had two capsules at ten hours, one capsule at eleven hours, with no effect; at fifteen hours low forceps extraction was carried out for fœtal distress. The baby had white asphyxia, but responded and was born alive.

Number 1308, a *primipara*, aged forty-four years, at two hours had two capsules; she became very drowsy, and at four and a half hours delivered herself naturally of a 3·68 kilogram (eight pound two ounce) baby, which had slight asphyxia.

In this case the mother was very drowsy, the fœtal heart sounds were quite all right, and maybe the rapid labour was the more important factor.

The Third Stage of Labour.

The third stage of labour was unaffected by "Nembutal". Three cases of *post partum* hæmorrhage occurred; all were cases of primary inertia of the first stage, and low forceps application terminated a long labour. Thus Number 2187 is typical.

This patient was in labour for four days, during which time she had four doses (five capsules) of "Nembutal". The placenta was manually removed one and a half hours after forceps extraction of the child, because of a slow steady trickle of blood from the flabby uterus. The cervix was intact.

Analgesia Results.

In exact figures the results are not easy to determine. In some cases I have doubted the veracity of some replies to questioning, and again, degrees of restlessness vary with different observers, as also in some I have noted "good effect" with no definite statement as to the degree of amnesia. However, two factors require consideration: (*a*) the relief of restlessness and of pain, (*b*) the degree of amnesia. Nine cases (3·6%) were listed as "bad", that is, there was no effect in either of the above factors. Several of these patients had single doses only—one capsule administered too late in labour to be effective; all patients, however, slept well *post partum*. Thirteen cases (5·2%) were "very good", that is, absolute quietness occurred during the period of labour and complete amnesia was present from the commencement of administration of "Nembutal". In the remainder restlessness varied, though the patients were subdued; amnesia likewise varied from complete forgetfulness to hazy recollections of various episodes. The vast majority, roughly 80%, might be classed as experiencing a good effect.

Conclusions.

The following conclusions may be drawn:

1. "Nembutal", given orally as an analgesic and amnesic, is a useful adjunct in midwifery.

2. It is best administered in small doses as required. Patients react differently, and I do not advocate large doses.

3. The time to commence administration is when the patient is in regular labour, with uterine contractions which last thirty to forty seconds, occurring every three to four minutes. I do not worry about the dilatation of the cervix.

4. Review the case at approximately hourly intervals for further administration of "Nembutal". This is the objection to its use in private practice, where the practitioner desires a sedative which will have a safe effect for several hours and will not require his constant attendance.

5. In prolonged administration watch must be kept on the respirations.

6. An attempt at a method of routine administration would be: zero hour, two capsules; one hour, one or two capsules; three hours, one capsule; six to seven hours, one capsule; ten to twelve hours, one capsule; after the third dose the patient will often carry on and deliver herself amnesically many hours later without further dosage.

7. "Nembutal" does not tend to delay the second or third stages of labour, except in a few cases in which the patient is very drowsy; and patience brings its own reward.

8. "Nembutal" in usual dosage required does not affect the mother or the child.

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THE PATHOGENICITY OF DERMANYSSUS AVIUM ET GALLINÆ AND OF TRICHOMES IN THE HUMAN BEING.

By HERMAN LAWRENCE, M.R.C.P. (Edinburgh),
Honorary Consulting Dermatologist, Saint Vincent's Hospital and Queen Victoria Hospital, Melbourne.

THE parasite known as *Dermanyssus avium et gallinæ* is only about a pin point in size. To be more exact its length is about 750 microns, or a little more than 0·5 millimetre. It is very small as compared with the pediculi usually affecting the human being, and its tendency to get away at daybreak and to hide in out of the way places makes its detection by the ordinary individual extremely unlikely.

It was due to the attack being on medical men that I first came to find this parasite as a cause of irritation to the skin. The medical man knows by the urgency of the symptoms that they must be due to a parasite, and so makes a very thorough examination.

It is quite thirty years since my first patient with this parasite, a medical man who lived at Caulfield, since deceased, came to consult me about a parasitic skin trouble and brought specimens of the parasite with him. Mr. C. French, Government Entomologist, was of the opinion that it was a *Dermanyssus avium*. It had eight legs, five jointed, clavate claws at the end of the legs, and markedly well developed mandibles. (See Figure I.)

When in Europe and America in 1907, I exhibited specimens of the dermanyssus to Dr. Saboraud (Paris) and the late Sir Malcolm Morris, London, and others, but none of them had had any experience of the parasite at that time as regards patients being attacked in their homes. I also exhibited specimens at Rome, 1912, in connexion with my paper read at the seventh International Dermatological Congress. Unfortunately the name of the parasite was incorrectly spelt in the Transactions of the Congress.

FIGURE I.
Microphotograph of *Dermanyssus avium et gallinæ*.

The last two books upon dermatology from America, by Sutton (two volumes), and by Andrews, do not mention the word dermanyssus at all. The books by English dermatologists mention that men handling poultry are affected by a papular eruption due to these mites.

Dr. Albiston, of our Veterinary Research Institute, kindly looked this matter up for me, and reports that there does not appear to be any literature suggesting the dermanyssus affecting persons in homes except as reported by myself in previous papers. The cases which I will later mention are solely to do with patients being affected in their homes, altogether independent of poultry yards. The parasites come from abandoned nests and get access to the rooms by means of windows, ventilators *et cetera*.

The question arises, how do medical men classify these cases, as of course they must occur in some numbers? I find that in one of my early cases I had the condition entered as pruritus, although I thought, on account of the symptoms, that it might be due to the dermanyssus, and when later it proved to be due to these parasites, I had neglected to alter the diagnosis. I think that many of these cases are credited to scabies, especially when sulphur ointment is successful in clearing up the condition. But of course sulphur ointment, as one might expect, is not always a permanent cure if these parasites are located in a nest in a creeper on the wall outside of the bedroom window and make another attack later. Sometimes the eruption suggests pruritus of an urgent nature, and a whole blood injection might be considered advisable, but good results could hardly occur unless these parasites happened to be visited by insectivorous ants in their natural habitat at the time chosen for the blood injection. (Of course these parasites are not insects; but no doubt as Arachnidæ, voracious ants find them quite palatable.) Doubtless in many cases the dermanyssi just die of natural causes, and the last treatment the patient has received is credited with the cure of the trouble.

Dr. Norman MacArthur, of Melbourne, who was one of my early patients to suffer from an attack of the dermanyssi, has kindly consented to write the following particulars of his experience with them:

On January 4, 1909, I became attacked with an intense irritation, especially in the pubic region, which became greatly aggravated at night. The pruritus was so severe that it suggested some parasitic origin. I consulted my old friend Dr. Herman Lawrence; we could not find any pediculi, but Dr. Lawrence suggested the trouble might be due to the *Dermanyssi avium*, and suggested I should make a thorough investigation at home, and he showed me the size of these parasites. I had to attend a congress in Sydney which was held to discuss the relative position of the dark and light shades of American citizenship (a Burns and Johnson affair), and that is how I am sure of the date of my attack by these parasites. During my stay in Sydney I was free of the pruritus, but on my return to Melbourne I had a very bad recurrence of the trouble. I then made a special hunt for the parasites and found, on the sponge in my bathroom, myriads of minute parasites which I thought might be blown in through the constantly open windows from the flowers outside. On closer observation I found a marked track from the basin to the top corner of the bathroom window, and from there on the outer wall to an opening under the slates of the roof, where lay a deserted starlings' nest. I collected from the sponge innumerable parasites and Dr. Herman Lawrence, under microscopic examination, diagnosed them as the *Dermanyssus avium et gallinæ*. They had, as seen under the microscope, eight legs and a formidable pair of nippers that were easily capable of producing intense pruritus. Moreover, its eight legs were sufficient to leave any carping critic of its identity without a leg to stand on. I boiled all sources of infection, and sprayed the track of the parasites and the starlings' nest with formalin. I afterwards spent many spare hours blocking up all possible ingress for starlings to nest under the roof; and since then there has been no further trouble from these parasites.

The following is an interesting case.

An old lady attending the skin department of the Melbourne Hospital under my care, complained most pitiably of severe biting of insects at night time, but she could not find them in the daytime. I excluded scabies, pediculosis, bugs *et cetera*. I then said to the students, this patient may be affected by the dermanyssus, and explained how difficult it was to trace it. I made a mark on the blotting paper showing the size of the parasite. The nurse then took the patient to the dressing room and returned with one of the patient's stockings, as she had found something moving on it. I put the something under the microscope and demonstrated to the students a splendid specimen of the dermanyssus.

I shall mention one last case as being of interest.

The late Sir George Syme asked me to see two patients who were suffering from a very pruritic skin affection. On my arrival he asked me to look into the microscope, and I found several specimens of the dermanyssi; these parasites had failed to get away at daybreak. I was not surprised when Sir George told me the parasites were quite new to him. These patients lived close to a goose farm at Kew, so I got a permit from the late Dr. Gresswell to examine the birds of this farm. I found that all the different kinds of birds, geese, turkeys, ducks and ordinary fowls, had numerous parasites upon them. Each kind of bird was generously supplied with its own peculiar lice (six legs), but I could not find any evidence of the dermanyssus (eight legs), and felt inclined to exonerate the poultry yard of responsibility and blame an abandoned birds' nest for the dermanyssi found in this case.

I wish to thank Dr. J. A. Gilruth, D.V.Sc., M.R.C.V.S., for helping me in getting the benefit of research work which is being carried out at some of the different veterinary institutions of the Common-

wealth, especially by Dr. Mackerras, of the Entomology Laboratory, Canberra, and Dr. Morgan, Microbiologist, New South Wales, and Mr. F. H. Roberts, M.Sc., Entomologist, Department of Agriculture, Queensland.

Mr. Roberts (in his paper, 1930), referring to the *Liponyssus bursa* and *Dermanyssus gallinæ* gaining entrance to private houses from birds' nests *et cetera*, states :

I think pigeons and sparrows are the worst offenders, especially the latter, which line their nests with the soft feathers of the domestic fowl. I may be wrong, but in so far as the liponyssus is concerned my observations have shown that the mites wander from the nests into the houses only after the nests have been vacated.

In Australia, the birds mentioned in this paper usually abandon their nests in the months of December and January. So that I would suggest that patients complaining of painful pruritus during these months not due to the usual recognizable causes for such troubles, should be closely examined for the presence of *Dermanyssus avium* or *Liponyssus bursa*. Any mention of these birds building about the dwelling where the patients live, should also arouse suspicion of the presence of these mites.

Trichomes.

The dictionary includes, under the heading of trichomes (from θρὶξ τριχός, hair), hairs, scales and other outgrowths from the epidermis of plants. I use the word as meaning hairs chiefly. In 1916, when working out the cause of the disease in the men who were affected during the mouse plague, I first encountered trichomes, and was puzzled at finding them so often on my slides. I made inquiries from Mr. Charles Brittlebank (Government Vegetable Pathologist). He explained to me their origin, and made me a slide of trichomes from the plane tree. I, even then, suspected them of being a cause of skin irritation, and in the years since then have found them many times to be the cause of dermatitis in my patients. At certain times of the year the number of trichomes being shed from the plane trees in Melbourne is very considerable, and coincident with this I get patients suffering with dermatitis which I attribute to this cause. It is very difficult to differentiate between the many kinds of trichomes, and even those coming from the same tree are sometimes slightly dissimilar in appearance. For example, those of the elm tree are much stronger on the lower branches than those on the top ones. This seems like a provision of nature to protect the trees from the ravages of animal life.

The protecting character of the monospicular trichomes of nettles is of course well known. When in Adelaide three years ago, I had with me a number of slides showing trichomes obtained from patients at various times, and these I had occasion to show to botanists of the Adelaide University and the Waite Institute. They were greatly interested and gave me some information on the subject, impressing on me the great difficulty in identifying the various kinds of trichomes when found in this way (that is, in a scraping of the patient's skin or clothing). Some trichomes are not harmful, or it may be that some persons are not susceptible to irritation from certain of them. I have proved this by placing a scraping containing both multispicular and monospicular trichomes on my own skin. I have worn this application for several hours with no irritation developing, and yet, as I shall describe later, my skin is highly sensitive to the trichomes of the Laganuria or cow itch tree. At the time of year when trichomes are floating in great numbers in the air, I find that the trouble comes from their catching in persons' clothing and then rubbing against the skin. I give the following case as an example of this.

A patient had a marked pruritus of the neck and was scratching the skin considerably where the collar of his singlet rubbed against the tender skin of the neck. Suspecting that the trouble was due to trichomes dropping down the inside of his collar and clinging to the woollen fabric of the singlet, I applied the Volkmann's spoon to the singlet collar and found trichomes in the material thus obtained. I also found trichomes in a scraping from the neck. Both appeared to be from the plane tree. I advised my patient to have the collars removed from his singlets and thus do away, to some extent, with the catchment of these bodies.

There is also the probability of trichomes catching in clothing, especially underwear, pyjamas, towels *et cetera*, while these are hung out to dry after being laundered. This is only supposition, but I will give the following case to show how I found trichomes in pyjamas, and for lack of any other reason one can only suppose that they got there in this way.

A young man, very particular about his personal cleanliness and also as regards having the best of underclothing, consulted me about a persistent and urgent pruritus of the skin of the covered parts, not on the parts exposed to the air, face, hands *et cetera*. There were occasional signs of dermatitis, probably chiefly due to scratching. On examination his skin was particularly hirsute, and on treating him with the ultra-violet rays, I noticed he had small accumulations of a wool like substance, particularly in the anal fold, umbilicus and axillæ, where the long hairs held these accumulations in spite of baths *et cetera*. I had this woolly substance examined at the University, and it was pronounced cellulose. I examined the accumulations microscopically and found that they contained numerous multispiculated trichomes resembling the hairs of plane trees. The microscope showed the fibres of cellulose to be stained in four colours, brown, red, yellow and blue in a mass of white. I examined the scrapings from his underwear, but could not get anything to compare with these woolly looking accumulations. Dr. J. A. Brenan suggested the examination of his bath towel and pyjamas. This I did with a negative result for the towel; but when I scraped the pyjamas with a blunt Volkmann's spoon, I found that the surface of the pyjamas peeled off very freely with the spoon. On examination with the microscope, the four colours with the white fibre as a base were clearly visible and multispiculated trichomes were present. The microphotographs of the trichomes show they were quite similar in appearance, and I think the strong hairs of his body were able to produce the scrapings from the surface of the pyjamas. Figure II shows several trichomes mixed up with the fibres of the woolly looking accumulations from scraping of pyjamas; these trichomes were quite similar to trichomes of cellulose accumulations on his body.

I give the following case as an example of trichomes causing trouble without use of clothing as a catchment.

The patient had an acute dermatitis of the left side of face and left ear. He stated that he slept on his right side and always had the windows wide open. I had the parts washed with distilled water, including the left ear. This water was then filtered and I examined the filtrate and found trichomes present. I prescribed for him, but he came to see me again the next day as the pain in the left ear was so severe. Dr. Bryan Foster was consulted and he syringed his ear, and on account of my finding trichomes, sent me the water used for syringing his ear. This I had filtered and I examined the filtrate and found trichomes, and also a small insect. The insect was in quite a good state of

preservation, head, antennæ, wings, body and legs (six) were all plainly visible. These foreign bodies had evidently blown into his bedroom through the open window.

I believe that trichomes float in the air and cause dermatitis much more commonly than is generally believed.

While on the subject of dermatitis due to plants, I shall draw attention to the last edition of Prosser White's book, which mentions two forms which are very instructive.

FIGURE II.
Microphotograph of scraping from pyjamas showing several trichomes, mixed up in fibrous structure, of cellulose accumulations. These trichomes are quite similar to trichomes in accumulations of cellulose occurring on body.

The *Rhus toxicodendron* produces acute dermatitis in the human, due to a toxic substance. It is stated that the pollen and hairs play no part in the production of the dermatitis due to rhus. Of course the sensitiveness of the person's skin to this poison plays an important part as regards the degree of inflammation occurring in any particular case. The following history of one of my patients supports what Prosser White states.

A female patient had recurring attacks of eczematous dermatitis. I found in the garden, in which she was accustomed to collecting flowers, some fine specimens of *Rhus toxicondendron* growing well, which I recommended to be destroyed. The gardener disliked the idea and muttered something about doctor's fads. However, the husband of the patient directed that my suggestions should be carried out. The day was very hot, and the plants were removed. I understand that a certain amount of sweating and swearing accompanied the operation. However, the gardener was not able to put in an appearance the next day owing to an acute dermatitis, his eyes and the exposed parts of his skin being badly inflamed.

In this case the gardener, though not usually sensitive to the plant, came into contact with a large amount of toxic substance in the operation of removing the plants.

On the other hand, in regard to the dermatitis caused by the *Primula obconica*, Prosser White states that it is due to the patient's skin coming into contact with the hairs of the plant. These hairs are easily seen attached to all parts of the plant above the ground. He also quotes Nestler, who has experimented with the hairs of this plant, and who finds that they contain an irritating substance. Even when the hairs have become dry, if they come in contact with the skin, they can produce an irritable dermatitis.

I shall mention one more case as being of interest while on this subject.

A young woman was working in a factory for the production of clothing from artificial silk and wool. There was urgent pruritus and dermatitis of chest, upper part of the arms and neck. Nothing to suggest dermatitis due to fur was noticeable. Scrapings with a blunt Volkmann's spoon, from skin of chest and shoulders showed multiple spiculated trichomes. (See Figure III.) Scrapings from the inner side of the garment made by herself of artificial silk and wool showed the presence of trichomes similar to the trichomes from the scraping of the skin. (See Figure IV.) The patient changed the garment with artificial silk in it for a pure cotton garment, with immediate improvement, using at the same time an anti-pruritic lotion. However, at the third visit, the skin on the outer side of the arm was still markedly pruritic. She then drew my attention to the fact that an outer garment was likewise made of artificial silk and wool. Examination of scrapings taken with a spoon of the skin and garment both showed the presence of the same kind of trichomes. This garment was changed for a cotton one and the skin trouble quickly improved. She ceased to attend at my rooms. I took it for granted that she had got quite well of her trouble.

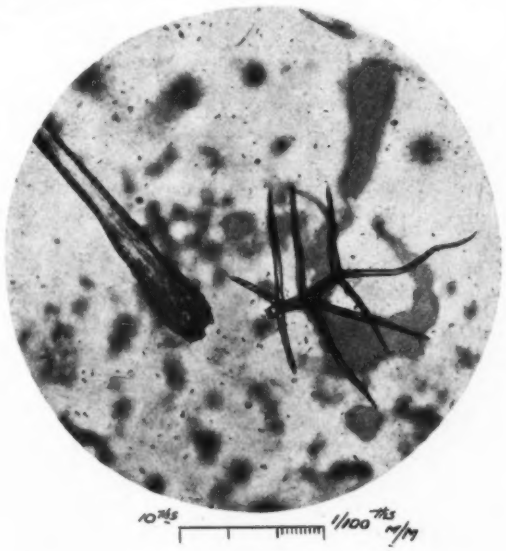

FIGURE III.
Microphotograph from scraping of skin of patient, wearing artificial silk and wool garment, showing large multispiculated trichome and a human hair present in scraping.

While in this case the woolliness of the artificial silk and wool material was probably responsible for the catchment of the trichomes, I have at times suspected artificial material as being a cause of dermatitis by itself, and have carried out a few experiments with regard to this. I have found that when you put together threads of natural wool, silk, cotton, and threads of certain artificial substances used in the production of clothing and submit them to such conditions as beating them with a steel-headed hammer or an iron plate, the natural cellulo-fibrous

substances are broken up, but the broken up pieces are still cellulo-fibrous and non-irritating to the skin. But the artificial substance which has been obtained

FIGURE IV.

Microphotograph of scraping taken from artificial silk garment, a broken trichome in open space, and another trichome hidden in fibres of artificial silk. A large spicule is seen lying across a fibre of natural wool.

by dissolving blocks of wood in strong acid solutions has been changed into a chemical substance, losing

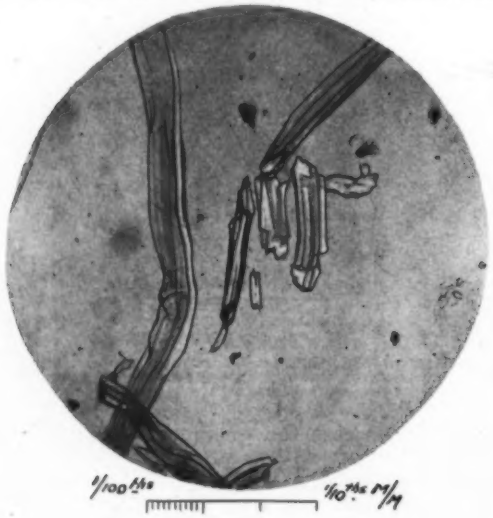

FIGURE V.

Chemical chips, showing what happens when artificial material is submitted to pounding experiment, whereas wool, silk and cotton still remain fibro-cellulose substances.

its fibro-cellular structure, and when submitted to the above experiment it breaks up into fine pointed chemical chips and powder, as shown in Figure V, which is irritating to the skin. A similar state of affairs may occur when substances made of a combination of artificial structures and natural fibres are ironed with the iron overheated, and possibly in the normal course of wear and tear.

In conclusion I wish to make a few remarks about the trichomes of the cow itch of Laganuria of Norfolk Island and Queensland. The hairs are sharp pointed at either end, about 2·5 millimetres in length. (See Figure VI.) I rubbed some of these hairs from this plant on the soft skin at the back of my fingers of the left hand, but they immediately caused a decided painful pruritus, so that I thought it advisable to wash them off at once, and to remove the hairs

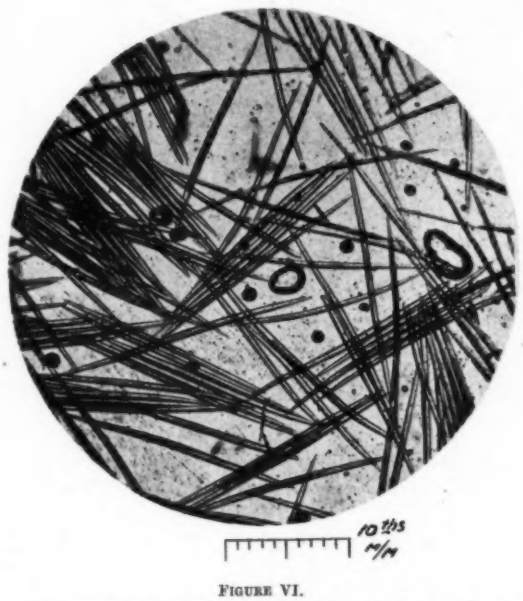

FIGURE VI.

Trichomes of cow itch, order Laganuria, Norfolk Island. I rubbed some of these dried hairs into the soft skin at base of fingers of left hand, with immediate painful pruritic results. Hairs are sharp pointed at either end, and easily penetrate the skin.

sticking into the skin in order to run no risk of an infected dermatitis. There is a cow itch tree on the Tennyson lawn at the east side of the Melbourne Botanical Gardens which I suggest should be fenced in, as it is near the footpaths, and a mother wheeling a perambulator might easily be tempted to rest under the shade of this tree, and when the pods are bursting the hairs fall down in myriads, which might easily cause serious trouble for the baby's eyes.

Twenty minutes after writing this last paragraph I was walking in the Gardens, and to my surprise I saw a perambulator in the shade of this tree, and a man was lying down beside it. I spoke to him and demonstrated the effect by bursting one of the pods. When he saw what came out of it he decided to move to another place for shade. I have since spoken to Mr. Rae, Curator of the Melbourne Botanical Gardens, and he has suggested making some provision for protection during the season of the bursting of the pods.

The Medical Journal of Australia

SATURDAY, JULY 6, 1935.

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RENAL LITHIASIS.

SUCH strides have been made during recent years in surgery of the renal tract that manœuvres not dreamed of twenty-five years ago are carried out nowadays as a matter of course and with safety. The renal tract may be visualized by opaque media introduced through a ureteral catheter and by dyes injected into the blood and excreted by the glomeruli. The pelvis can, when need arises, be drained and treated with a variety of chemical solutions by means of the operating cystoscope; and surgery of the kidney itself has reached such a stage that there appears to be little scope for the genius of the enterprising surgeon. But the understanding of diseases of the kidney has kept pace neither with the invention of elaborate instruments nor with the acquisition of skill in using them. Many diseases of the kidney are little better understood than they were twenty-five years ago, and even the normal physiology of the organ is not clear in all its details. In these circumstances it is both useful and salutary from time to time to take stock of the relationship between knowledge and practice—useful because we realize the extent of our empiricism and are faced with avenues to be explored, and salutary that we be not puffed up in our own conceit and become too venturesome.

At the eighty-fifth annual meeting of the American Medical Association, held in June, 1934, the members of the Section of Urology discussed the subject of renal lithiasis in a series of papers that are published in *The Journal of the American Medical Association* of April 15, 1935. A. R. Stevens discussed bilateral urinary calculi and made special reference to the therapeutic problems associated with them. C. C. Higgins gave an account of experimental and clinical studies on the production and solution of urinary calculi. L. D. Keyser discussed recurrent urolithiasis, and G. F. Cahill the medical and surgical treatment of calculous anuria. F. E. B. Foley dealt with the management of ureteral stone, and V. S. Counsellor and J. T. Priestley gave an account of the present conception of renal lithiasis. Though a great deal of what these authors write may not be new, they have discussed almost every aspect of the subject. They certainly show to what a stage of efficiency the surgery of stone in the kidney has been carried, but their remarks are tinged by caution, and several of them lay stress on the gaps in our knowledge of the causation of the condition. Stevens shows that no hard and fast rules can be laid down regarding treatment. He urges that less attention should be paid to rules and formulæ. The immediate needs of the patient, he states, may overshadow the ultimate good, but always the general aim should be to render the greatest service with the least risk. Since Stevens is discussing bilateral calculi, the wisdom of his remarks will be obvious. His statements, however, are equally true of calculi of all types and in every position. The experimental work of Higgins has an important bearing on treatment. He has shown that urinary calculi are formed in albino rats that are fed on a diet deficient in vitamin *A* and that the addition of vitamin *A* to the diet causes disintegration and solution of these experimentally produced calculi. He adds that a high vitamin acid ash diet has produced a decrease

in the size or total disappearance of renal calculi in patients refusing surgical operation or in whom operation has not been indicated. It should be noted that Keyser issues a warning against over-zealous administration of drugs that acidify the urine—what appears not to be an excessive dosage may be harmful if renal insufficiency is present. This brings us to the question of the causation of renal calculi. Keyser points out that calculi may be produced in laboratory animals in the following ways: (i) by the feeding of oxamide, (ii) by producing an artificial excessive excretion of calcium oxalate, (iii) by excessive doses of parathyreoid extract and of viosterol, (iv) by the production of Eck fistulæ when uric acid calculi are formed, (v) by feeding diets deficient in vitamin *A*, (vi) by infection with urea-splitting streptococci, staphylococci and *Bacillus proteus-ammoniæ*, (vii) by the incrustation of organic or inorganic foreign bodies in the presence of infection. How far animal observations can be applied to human beings is, of course, doubtful. Stasis and infection undoubtedly play a part in many instances; so do dietetic factors. In this connexion readers are reminded of an important paper that appeared in *The Australian and New Zealand Journal of Surgery* of October, 1933, in which M. S. S. Earlam and the late Robert Lee Brown discussed the relationship of prolonged immobilization and urinary tract infection to the formation of renal calculi. Work has been done by several observers on the relationship of hyperparathyreoidism to calculus formation, and attention has also been given to the action of colloids in preventing the formation of stone.

From the foregoing it is clear that much investigation is needed before the causation of renal calculi is made clear; and it follows that the treatment of a patient with a stone or stones in the kidney is by no means simple. It is not sufficient merely to remove the calculi. Every patient must be studied in the light of present knowledge—his general constitution and mode of life must be considered, his renal function must be estimated, and the presence or absence of infection must be determined. When this has been done, the removal of stones must be complete, infection should, if possible, be eliminated, and care should be taken that all possible causes of obstruction are removed. Moreover, in an effort to prevent recurrence, the patient should be shown how to order his life; in most instances he should also be submitted to periodical examinations, particularly if renal function is impaired or drainage of the kidney faulty. In other words, renal lithiasis is a medical as well as a surgical problem. With fuller knowledge it may become purely a medical matter or a condition that will be easily prevented.

Current Comment.

VACCINATION AGAINST SMALLPOX.

IT is more or less generally agreed that universal vaccination against smallpox in infancy is desirable; but a feature that seems often to escape attention, or at any rate to receive less consideration than it merits, is that vaccination does not confer permanent complete immunity to smallpox. Concerning the period of immunity there is some divergence of opinion, due to such factors as variable racial immunity, variable quality of vaccine lymph, variable methods, and variability in interpretation of results of revaccination. In a recent valuable paper J. L. Pinto discusses the results of his investigations into the duration and degree of immunity conferred by vaccination in infancy in Bombay.[1] Pinto uses a standard method of vaccination and revaccination, a standard instrument, and lymph of uniform quality in a standard dilution. He divides the results of revaccination into four main classes: I, "definitely unsuccessful"; II, "very slight reaction", in which there is a small papule with very slight or no areola; III, "accelerated vesicular reaction", which appears sooner after the operation than in primary vaccination; IV, "definitely successful", in which there is a typical reaction on the eighth day after vaccination. In Class I immunity still exists. Reactions of the second class are probably allergic; in Pinto's opinion they indicate "the first step of the backward journey on the ladder of vaccination immunity". In Class III the reaction reaches its maximum between the fifth and sixth days. Some authorities regard this reaction as evidence of immunity; Pinto prefers to regard it as evidence of "residual immunity in its last waning stage and affording a poor protection against smallpox". Pinto revaccinated large numbers of children at intervals of one to seven years after vaccination in infancy. He noted that even within one year there were 21·7% of reactions of Class II; in two years there were 5·85% of reactions of Class III and 0·55% of Class IV; at seven years there were

[1] *The Indian Medical Gazette*, March, 1935.

15·95% of Class I, 23·95% of Class II, 15·95% of Class III, and 44·15% of Class IV. If, as he suggests, reactions of Class III be taken as indicative of a slight degree of immunity only, 60·1% of children, seven years after vaccination in his series, were partially or wholly unprotected against smallpox. At two years 6·4%, and at three years 23·8% of children belonged to Classes III and IV and were what Pinto terms "unsafe". Roughly, it may be said that one-fifth of the children vaccinated in infancy lose their immunity within four years, and one-half within seven years. Pinto recommends revaccination at the age of four or five years in normal times, and within one year of primary vaccination during epidemics.

An investigation along similar lines in Australia might give useful information. But it would require the attention of a single observer over a good many years, and would demand the use of a standard technique; conclusions of value could not otherwise be made.

RENAL TUBERCULOSIS.

THE problem arises occasionally as to what is the wisest plan to follow when tubercle bacilli have been demonstrated in the urine. Of course, when contrast radiography of the renal pelvis and calyces has revealed definite deformity or destruction of one kidney, or when tests of the renal function have shown a serious disparity in the efficiency of the kidneys, there is no problem. The condition to be dealt with is, then, a destructive and inevitably progressive surgical lesion of the affected organ, for which the only safe treatment is removal. But some hesitancy is felt when after investigation of some relatively slight urinary disturbance a few red blood cells are found in the urine, and, what is much more disturbing, tubercle bacilli. If pyelography is carried out, perhaps no definite abnormality is discovered, and in the absence of evidence of an actual anatomical lesion it may be hard to arrive at a decision as to what should be done. In other words, does renal tuberculosis heal, if not of advanced grade?

E. L. Keyes, from the vantage point of thirty-five years of experience, reopens the subject.[1] He contrasts the attitudes of the pathologist and the urologist. The former, he says, is patient; he feels that everything is possible, and when tubercle bacilli have been found in the urine, but no demonstrable deformity of the kidney is present, and when even these signs disappear and subsequent section of the kidney shows no lesion, he accepts the pathological diagnosis of healed renal tuberculosis and lets the matter drop. The urologist, however, is not satisfied, for, as Keyes puts it, he has either to tolerate a pathological heresy, that a healthy kidney may transmit living tubercle bacilli, or grant that renal tuberculosis may heal without gross lesion, or suppose a contamination from some other part of the urinary tract. Of these, the second only is likely, and the urologist emphatically believes that such healing is rare. Keyes quotes a few cases in which undoubtedly this did occur, though the brief notes that he gives are far from convincing in several instances. Even if all his cases are not genuine examples of healing of a true, if small, renal lesion, his cause is strengthened rather than weakened, for he wishes to emphasize what a dangerous disease renal tuberculosis really is and how rarely it can be safely handled by inactive methods. He remarks that further confusion is caused by the known occurrence of periods of quiescence even in surgical tuberculosis of the kidneys. This latter phase of the disease is well known to physicians, for it is not very uncommon to see patients who are suffering from chronic pulmonary tuberculosis who maintain a surprising standard of health in spite of the coexistence of undoubted disease in the kidneys also. To make this clearer, in cases of chronic fibrotic pulmonary disease the occurrence of urinary symptoms sometimes gives rise to suspicion of renal infection, a suspicion that is found on investigation to be only too well founded, and yet, though it is thought that the patient will now go down hill swiftly, the outlook, though, of course, ultimately bad, may prove to be better than was feared. But, as the author says, these experiences must not blind us to the serious position when tuberculous renal disease is proved to exist. Keyes quotes Medlar, who points out that renal tuberculosis is originally hæmatogenous, probably bilateral, that it is characterized by periods of quiescence, that a non-surgical form exists, in which the lesions heal, but that in one or both kidneys severe surgical lesions may develop. The surgical creed enunciated by the author is, however, this: that once deformity of a kidney is demonstrated due to tuberculosis, the kidney is doomed and its just fate is "nephrectomy, not hasty nephrectomy, but surely prompt nephrectomy". He also lays stress on the fact that while the original tuberculous infection may become quiescent, the kidney may, and will, if the lesion is a severe one, become so disorganized that it is worse than useless, being dangerous, for it is no consolation to see a patient survive an active tuberculous disease only to die of pyonephrosis.

Nobody would deny the truth of Keyes's statement that latency is no proof of death of the infection, for this is the typical life history of this disease in many other parts of the body. Even those who have some lingering doubts and who fear being led into countenancing drastic methods of treatment by enthusiastic specialists should remember that they must not dally so long as to endanger the patient. One would not remove a kidney the next morning after finding acid-fast bacilli in the urine, but neither would one, after finding no deformity in the kidney structure, send the patient away without adequate warning as to the vital necessity for frequent and careful observations.

[1] *The Journal of the American Medical Association*, April 20, 1935.

Abstracts from Current Medical Literature.

DERMATOLOGY.

Fluorescence of Fungus Colonies with Filtered Ultra-Violet Radiation.

G. M. LEWIS (*Archives of Dermatology and Syphilis*, March, 1935) states that little attention has been given to the question of the fluorescence of fungus cultures. The author has made some systematic observations in connexion with primary and transfer cultures of various fungi with a view to their diagnosis. The cultures were grown on Sabouraud's dextrose medium, the formula being as follows: crude American dextrose, 40 grammes; peptone, 1·0 gramme; agar, 18 grammes; and distilled water, 1,000 cubic centimetres. The source of radiation was a water-cooled quartz mercury vapour arc lamp screened with a wood filter. The cultures were for the most part studied through the glass walls of ordinary test tubes, as Petri dishes were more readily contaminated. Readings were recorded every one or two days. Many different species of fungi fluoresced in characteristic and individualistic colorations. With some species the colours were distinctive as early as three or four days after inoculation. With other species the fluorescence was vague and not distinctive at any stage of the growth. The method was of certain value only in the first three weeks of the growth. *Microsporon lunosum* and *Microsporon andonini* were dissimilar. The characteristics and colorations of various fungi are given in detail.

Hodgkin's Disease of the Skin.

A. B. LOVEMAN (*The Journal of the American Medical Association*, May 4, 1935) reports a case of Hodgkin's disease of the skin. The patient was a man, aged fifty-five years, who complained of pruritus that started on the hands, spread to the penis and scrotum, and involved the entire body. Pruritus was followed by exfoliation occurring in sheets of epidermis. These symptoms preceded the fever and adenopathy of Hodgkin's disease. The author publishes several photomicrographs and quotes the findings on biopsy on which the diagnosis was made. He refers to the views of Wile that the lymphoblastomata may manifest themselves cutaneously in three different ways. The first group are true metastatic lesions occurring in the presence of lymphadenotic blood pictures. These may express themselves cutaneously as tumours, infiltrations, hyperpigmentation or otherwise. In the second group cutaneous expressions may antedate involvement of the blood and lymph glands. Most of the cases of exfoliative dermatitis fall in this group. The third group includes the scaly erythrodermas, localized tumours, and so on, in which transitory deviations from normal blood pictures are found, as well as changes in the lymph glands. The author states that every case of exfoliative dermatitis or universal scaly erythroderma should be regarded as a possible cutaneous manifestation of one of the lymphadenoses.

Gastric Acidity and Acne Vulgaris.

S. L. IMMERMAN (*Archives of Dermatology and Syphilis*, March, 1935) has made routine studies of ninety-three cases of *acne vulgaris* in patients suffering from no other disease. The studies included determination of the hæmoglobin content and erythrocyte counts. The patients were given an Ewald meal on an empty stomach, after the removal of the contents which had accumulated on fasting. Fractions were removed every half hour for two hours. At the last extraction all of the gastric contents were removed and the stomach was washed with 250 cubic centimetres of water. The data obtained from a fractional test meal of bread and water were analysed. The averages found cannot be considered as definitely settled on the basis of the present study, but there was no apparent hypoacidity in this group. There was no apparent correlation of the gastric acidity, the hæmoglobin content and the red blood cell count as shown by spot diagrams. Correlation coefficients were not calculated.

Skin Sensitivity to Bichromate.

C. E. HERCUS AND H. D. PURVES (*The Lancet*, April 27, 1935) report a dermatitis occurring on the flexor surfaces of both forearms of a boy, aged sixteen years. He was employed in a fur coat manufacturing factory, where his work was to damp dyed rabbit skins with water applied with a brush. The cause of the condition was found to be a bichromate solution used in the manufacturing process. A definite skin reaction was obtained with 0·0000033 gramme of potassium bichromate applied externally and with 0·0000000033 gramme on intradermal inoculation. Attempts at passive transference of sensitivity were unsuccessful.

Rosacea-Like Tuberculosis.

V. J. WILE AND F. H. GRAUER (*Archives of Dermatology and Syphilis*, February, 1935) review the literature and discuss sixteen cases of rosacea-like tuberculosis that have been reported. They also discuss in detail five new cases which they have presented. Because of the uniformly tuberculous histology, this condition would seem to be a form of true tuberculosis of the skin, presumably a hæmatogenous spread from an underlying focus. The lesions, which are chiefly distributed over the forehead and cheeks, are of a reddish-blue tint, and, as in rosacea, often show telangiectasis. The differential diagnosis is discussed at length. Previous observations have indicated that patients with this condition are hypersensitive to tuberculin, whereas this study shows that anergic cases may occasionally be met with. While a tuberculin test is an important diagnostic aid, it should not be accepted as pathognomonic of this disorder. The treatment of the condition is discussed, ultra-violet light and general constitutional treatment being chiefly employed.

UROLOGY.

Renal Furuncle.

G. F. GARDINI (*Archivio Italiano di Urologia*, August, 1934) describes a personal case of solitary abscess of the kidney in a child of twelve. This lesion is commonly called carbuncle of the kidney, but the author prefers the term furuncle on account of its macroscopic characteristics. The diagnosis is often difficult, for the symptoms are obscure. The disease is easily confused with perinephritis or with perinephric abscess, which, however, not infrequently accompanies renal furuncle. At operation it is of the highest importance to examine the kidney, even if perinephric infection is discovered, for nephrectomy is necessary if renal furuncle is present. Authors who have tried to treat the condition by less than radical measures have drawn attention to the unfortunate results of such endeavours. In the author's case, histological study justified the nephrectomy, for throughout the apparently healthy portions of the renal parenchyma numerous foci of infection were found.

Fused Kidneys.

L. ZEISS AND H. BOEMINGHAUS (*Zeitschrift für Urologie*, September, 1934) have made a study of 44 cases of fused kidneys in recent literature, including six personal cases. All these are cases in which pyelographic diagnosis was actually made before treatment. In most cases the anomaly took the form of horseshoe kidney; in a small number of cases crossed dystopia was present. There is no symptom test characteristic of horseshoe kidney, and on account of the rarity of the condition, the possibility of renal disease is hardly ever thought of. Therefore exploratory laparotomy is usually performed. In obscure abdominal tumours (that is, swellings) before operation is performed bilateral retrograde pyelography should be performed. In the case of renal anomalies, very often one or, less often, both pelvic-calycal systems are obstructed, and therefore dilated. Anomalies of level of one kidney may be discovered, or both organs may be on the one side, and the ureter of the crossed organ is seen running across the vertebral column. In the case of horseshoe kidney, among other signs is to be noted the fact that the long axes of the kidneys, when produced, converge caudally, instead of cephalically, as is normal. In regard to

the treatment of horseshoe kidney when no gross pathological change occurs in one half, it is often considered advisable to divide the isthmus. In considering the question of operative approach in such cases it is of value to note that in symmetrical horseshoe kidney the line of isthmus division lies in the middle line of the body, while with asymmetrical horseshoe kidney the isthmus division line lies with the greatest regularity on the same side of the vertebral column as the more highly placed limb of the horseshoe. Should one have failed to diagnose a horseshoe kidney and have approached the swelling transperitoneally, one may complete the necessary renal operation by this access. Otherwise extraperitoneal approach is the method of choice. The usual subcostal loin and flank incision may be extended horizontally forwards to the margin of the *rectus abdominis* muscle, and the latter may be retracted medially if necessary. The so-called abdomino-lateral, paraperitoneal approach is another method, especially suitable for visual freeing of a dystopic kidney. A pararectal incision is made, the peritoneal sac is drawn medially, and so, more or less from the front, the kidney is attained, and so the anatomical situation is clearly under the eye. This manœuvre of displacing the peritoneal sac is commonly employed when approaching stones in the pelvic ureter, but it is not generally appreciated that higher up the same manœuvre may be exploited with advantage.

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Abstracts from Current Medical Literature.

DERMATOLOGY.

Fluorescence of Fungus Colonies with Filtered Ultra-Violet Radiation.

G. M. LEWIS (*Archives of Dermatology and Syphilis*, March, 1935) states that little attention has been given to the question of the fluorescence of fungus cultures. The author has made some systematic observations in connexion with primary and transfer cultures of various fungi with a view to their diagnosis. The cultures were grown on Sabouraud's dextrose medium, the formula being as follows: crude American dextrose, 40 grammes; peptone, 1·0 gramme; agar, 18 grammes; and distilled water, 1,000 cubic centimetres. The source of radiation was a water-cooled quartz mercury vapour arc lamp screened with a wood filter. The cultures were for the most part studied through the glass walls of ordinary test tubes, as Petri dishes were more readily contaminated. Readings were recorded every one or two days. Many different species of fungi fluoresced in characteristic and individualistic colorations. With some species the colours were distinctive as early as three or four days after inoculation. With other species the fluorescence was vague and not distinctive at any stage of the growth. The method was of certain value only in the first three weeks of the growth. *Microsporon lunosum* and *Microsporon audonini* were dissimilar. The characteristics and colorations of various fungi are given in detail.

Hodgkin's Disease of the Skin.

A. B. LOVEMAN (*The Journal of the American Medical Association*, May 4, 1935) reports a case of Hodgkin's disease of the skin. The patient was a man, aged fifty-five years, who complained of pruritus that started on the hands, spread to the penis and scrotum, and involved the entire body. Pruritus was followed by exfoliation occurring in sheets of epidermis. These symptoms preceded the fever and adenopathy of Hodgkin's disease. The author publishes several photomicrographs and quotes the findings on biopsy on which the diagnosis was made. He refers to the views of Wile that the lymphoblastomata may manifest themselves cutaneously in three different ways. The first group are true metastatic lesions occurring in the presence of lymphadenotic blood pictures. These may express themselves cutaneously as tumours, infiltrations, hyperpigmentation or otherwise. In the second group cutaneous expressions may antedate involvement of the blood and lymph glands. Most of the cases of exfoliative dermatitis fall in this group. The third group includes the scaly erythrodermas, localized tumours, and so on, in which transitory deviations from normal blood pictures are found, as well as changes in the lymph glands. The author states that every case of exfoliative dermatitis or universal scaly erythroderma should be regarded as a possible cutaneous manifestation of one of the lymphadenoses.

Gastric Acidity and Acne Vulgaris.

S. L. IMMERMAN (*Archives of Dermatology and Syphilis*, March, 1935) has made routine studies of ninety-three cases of *acne vulgaris* in patients suffering from no other disease. The studies included determination of the hæmoglobin content and erythrocyte counts. The patients were given an Ewald meal on an empty stomach, after the removal of the contents which had accumulated on fasting. Fractions were removed every half hour for two hours. At the last extraction all of the gastric contents were removed and the stomach was washed with 250 cubic centimetres of water. The data obtained from a fractional test meal of bread and water were analysed. The averages found cannot be considered as definitely settled on the basis of the present study, but there was no apparent hypoacidity in this group. There was no apparent correlation of the gastric acidity, the hæmoglobin content and the red blood cell count as shown by spot diagrams. Correlation coefficients were not calculated.

Skin Sensitivity to Bichromate.

C. E. HERCUS AND H. D. PURVES (*The Lancet*, April 27, 1935) report a dermatitis occurring on the flexor surfaces of both forearms of a boy, aged sixteen years. He was employed in a fur coat manufacturing factory, where his work was to damp dyed rabbit skins with water applied with a brush. The cause of the condition was found to be a bichromate solution used in the manufacturing process. A definite skin reaction was obtained with 0·0000033 gramme of potassium bichromate applied externally and with 0·0000000033 gramme on intradermal inoculation. Attempts at passive transference of sensitivity were unsuccessful.

Rosacea-Like Tuberculosis.

V. J. WILE AND F. H. GRAUER (*Archives of Dermatology and Syphilis*, February, 1935) review the literature and discuss sixteen cases of rosacea-like tuberculosis that have been reported. They also discuss in detail five new cases which they have presented. Because of the uniformly tuberculous histology, this condition would seem to be a form of true tuberculosis of the skin, presumably a hæmatogenous spread from an underlying focus. The lesions, which are chiefly distributed over the forehead and cheeks, are of a reddish-blue tint, and, as in rosacea, often show telangiectasis. The differential diagnosis is discussed at length. Previous observations have indicated that patients with this condition are hypersensitive to tuberculin, whereas this study shows that anergic cases may occasionally be met with. While a tuberculin test is an important diagnostic aid, it should not be accepted as pathognomonic of this disorder. The treatment of the condition is discussed, ultra-violet light and general constitutional treatment being chiefly employed.

UROLOGY.

Renal Furuncle.

G. F. GARDINI (*Archivio Italiano di Urologia*, August, 1934) describes a personal case of solitary abscess of the kidney in a child of twelve. This lesion is commonly called carbuncle of the kidney, but the author prefers the term furuncle on account of its macroscopic characteristics. The diagnosis is often difficult, for the symptoms are obscure. The disease is easily confused with perinephritis or with perinephric abscess, which, however, not infrequently accompanies renal furuncle. At operation it is of the highest importance to examine the kidney, even if perinephric infection is discovered, for nephrectomy is necessary if renal furuncle is present. Authors who have tried to treat the condition by less than radical measures have drawn attention to the unfortunate results of such endeavours. In the author's case, histological study justified the nephrectomy, for throughout the apparently healthy portions of the renal parenchyma numerous foci of infection were found.

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British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held on May 30, 1935, in the Robert H. Todd Assembly Hall, British Medical Association House, 135, Macquarie Street, Sydney, DR. A. M. DAVIDSON, the President, in the chair.

Premedication in Anæsthesia.

DR. C. E. CORLETTE read a paper entitled: "Premedication in Local Anæsthesia" (see page 1).

DR. W. I. T. HOTTEN read a paper entitled: "Premedication in General Anæsthesia" (see page 5).

DR. E. P. BLASHKI, speaking on behalf of the Section of Oto-Rhino-Laryngology, expressed his appreciation of the papers and of the wealth of detail that had been given in regard to methods of premedication for local and general anæsthesia. The object of premedication was to improve the condition of the patient before and after anæsthesia. Premedication implied more than a consideration of the narcotics to be used; its object was to produce a happy and comfortable state of mind in the patient. Patients were worried and interfered with too much before operation, and sometimes purged to such an extent that they were put on the operating table in a state of dehydration.

Dr. Blashki referred to the investigation of the use of insulin in long operations. In England work had been done showing that insulin lessened shock.

As far as the use of hypnotics or sedatives before operation was concerned, Dr. Blashki said that patients demanded them and the medical practitioner therefore should be able to supply them. Some still disagreed with their use. But after all it was not long since it was considered a sin to administer anæsthesia at all; now it was considered by some to be a sin to do it well. Surgeons accustomed to having patients properly anæsthetized would be sorry to go back to the days when the patient was not properly "under", and when it was necessary to administer further ether or two smart blows with the bottle. Premedication made a very different picture for the patient, in regard to his comfort and to his feelings after the operation. The detail set forth by Dr. Hotten made further comment unnecessary.

In regard to the barbiturates, Dr. Blashki said that they must be used for hypnosis only. His own experience had been confined to "Nembutal", "Hebaral sodium" and "Amytal". He had found "Hebaral sodium" the least reliable, and patients had sometimes complained of sleeplessness after taking this drug. Dr. Blashki thought that the place of "Avertin" was now in premedication and not in basal narcosis. As an oto-rhino-laryngologist he had not had much experience with "Sodium evipan"; it was not suitable for many of the operations that he performed.

The use of premedication demanded more time and attention from the anæsthetist than it was customary to give. The anæsthetist must also have a knowledge of the drugs that he used, and must be prepared and able to use such agents as "Coramine" and carbon dioxide if necessary. With premedication, too, the patients required more attention from nurses.

In regard to ethyl chloride and ether, Dr. Blashki said that there seemed to be a regrettable tendency for anæsthetists to induce deep anæsthesia with ethyl chloride and then to change over to ether, instead of using the ethyl chloride merely as a means of making things pleasant for the patient.

Referring to the use of hyoscine, Dr. Blashki suggested a reason why it should sometimes cause excitement. It had been said that lævorotatory scopolamine was an excitant, whereas the dextrorotatory form was not. Possibly when excitement occurred there was an excess of the lævorotatory form in the drug used.

DR. GEORGE ABBOTT thanked the speakers for their addresses. He recalled the days when Dr. Corlette used to attend meetings of the University Medical Society, during which he sat with closed eyes, apparently asleep; but during the discussions he was most alert and usually said something valuable.

Dr. Corlette had mentioned a patient of ninety-one and said that he did not know what he had. Dr. Abbott hoped that he had fifty guineas.

Dr. Abbott said that, though interested in both papers, he had nothing very valuable to say in the discussion, except in regard to the history of anæsthesia at the Royal Prince Alfred Hospital. He was senior resident medical officer and anæsthetist for a year, and during that period there was not a death under anæsthesia, and artificial respiration was not done once. In one peculiar instance Dr. Abbott had inadvertently practised hypnotism, with 100% success; it was in a tedious plastic operation on the eyes that lasted for over three-quarters of an hour. Much could be done by suggestion.

Great progress had been made and certain operations could be performed with great comfort to the patient. In the old days they had no intrapharyngeal or intralaryngeal methods of anæsthesia and they used not even to perform tracheotomy for operations on the jaw, and there was a struggle between the surgeon and the anæsthetist, the one performing the operation and the other keeping the patient anæsthetized. Dr. Abbott recalled good results obtained from the use of Clover's inhaler. He used to start with chloroform and then carry on with ether in the inhaler. He remembered that, when ethyl chloride had just been introduced, some anæsthetists used to push it too much, and there had been some worrying cases.

DR. HUGH HUNTER congratulated the readers of the papers. Premedication was a subject on which he felt keenly, mainly because in the last few years it had been a great deal abused. He had seen men who could not even give ordinary open ether properly, handling these powerful and toxic agents; it was with a sense of relief, therefore, that he had heard Dr. Hotten advise conservatism in their use, and especially in the use of the barbiturates.

Dr. Corlette in his opening words had struck an important note. He made it clear that premedication did not consist purely in the administration of drugs. Suggestion and environment played an important part, and a part just as important as drugs, in premedication. There was nothing like talking to the patient beforehand and reassuring him; at times it was just as good as a dose of six grains of "Sodium amytal".

The main question in regard to the barbiturates was that of dosage. Dr. Hunter thought that if "Sodium amytal" were used, a dose of 0·36 gramme (six grains) should not be exceeded. At times the use of these drugs diminished the amount of ether required, but this was not always so; sometimes the ether requirement was increased. Dr. Hunter spoke of a young woman to whom 0·54 gramme (nine grains) of "Sodium amytal" had been given; she was only small and it had seemed certain that four or five ounces of ether would induce deep anæsthesia. She had been brought into the operating theatre asleep; but when the administration of ether was commenced she had become wildly excited and extremely pale; 330 cubic centimetres (eleven ounces) of ether had been required to induce anæsthesia. Dr. Hunter had been glad to get her off the table. Even with small doses of the barbiturates the patients become very pale. After fifteen years of hospital work, Dr. Hunter felt that he was in a position to say whether patients were better without these drugs; he was never happy using them. Patients were generally better off without them.

It was important never to promise the patient sleep; if the promise was not fulfilled, they found it hard to forgive. So long as the patient was quite calm, that was all that was required. The average person approached an operation with a certain amount of calm; certainly some were excited and required sedation, but not very many. He thought there was no definite indication for basal narcosis.

Dr. Hunter was keenly interested in a point brought up by Dr. Blashki and recently mentioned by Dr. Storey

in THE MEDICAL JOURNAL OF AUSTRALIA, namely, the use of ethyl chloride before ether. A few years ago men had said that they had excellent results from using ethyl chloride before ether. Though he regarded it unfavourably, Dr. Hunter had said that he would try it again, and he had often tried; during these attempts he had had three remarkable cases. In these cases, about a quarter of an hour after the change from ethyl chloride to ether, the patient suddenly collapsed and went ashen, though apparently in good condition. Dr. Hunter had asked others whether they had ever seen this happen, and they had all said that they had not. Then Dr. Lidwill had said that, though he had not seen it himself, he believed that Embley had done work on the subject and noted the phenomenon. The whole question was one of the dosage of ethyl chloride. Dr. Hotten had said that four cubic centimetres were given. But Dr. Hunter had seen collapse occur after three cubic centimetres. Dr. Hunter also mentioned that respiratory spasm was apt to occur.

Dr. Hunter disliked the use of barbiturates in thyreoid surgery; he considered that in serious cases of thyreotoxicosis it would push the patient over the border. He himself had used barbiturates in such instances and had regretted it.

Dr. Corlette had mentioned the time before operation that morphine should be given in local anæsthesia. This also applied to general anæsthesia. It should be given well beforehand, about one hour. Morphine and scopolamine were always better when a "closed" type of anæsthesia was employed.

In regard to patients who asked for premedication, Dr. Hunter thought it well to see the patient the day before the operation and to have a talk about it; he thought that if the medical practitioner talked wisely the patient would not demand premedication so often. Dr. Hunter said that he had administered anæsthetics to a number of medical practitioners who had asked for premedication. He had asked them to have ether given by the open method alone, and they had agreed, with one exception, in which the ethyl chloride-ether sequence was used. Almost without exception they had expressed surprise at the pleasantness of the anæsthesia.

DR. J. COLVIN STOREY thanked Dr. Corlette for his paper and for the good influence that he had exerted in drawing attention to the operations that could be done under local anæsthesia. He did not quite agree with Dr. Corlette's indications for local anæsthesia. He himself had not done 2,000 or even 200 such operations. He mentioned a patient to whom morphine and hyoscine had been given before lumbar colostomy; the resulting excitement had been so great that it had become necessary to hold the patient to the table while the operation was finished. Dr. Storey had found in the small number of patients on whom he had operated with local anæsthesia that premedication with morphine was sufficient. He preferred his patient to be well alive. If pain was felt, the operation could be stopped and more local anæsthetic administered. Dr. Storey was afraid of powerful drugs and preferred to stick to what he knew. He knew morphine, but not hyoscine.

Dr. Storey thought that the demand for premedication was largely due to the manufacturing chemists and to medical practitioners themselves. It was a sign of the times. Everybody was looking for something new; and so medical practitioners were induced to give powerful drugs of which they knew nothing. Dr. Storey knew of two patients with toxic goitre who had been killed straight out by such drugs. They were very potent, and the general practitioner would save his patients unnecessary risk and himself much worry if he avoided them. Dr. Storey saw no reason why they should not stick to morphine. It would be impossible to have a more nervous patient than the one suffering from toxic goitre, and yet he would settle down and submit to operation. And from the surgeon's point of view, if the patient was a human chemist's shop it was difficult to know what he was suffering from. Certain resident medical officers used these drugs extensively and forgot the principles of anæsthesia in their preoccupation with new-fangled notions.

Dr. Storey would not allow ethyl chloride to be given to patients on whom he operated. He had seen enough trouble and heard of sufficient disasters. Ethyl chloride was too sudden and exercised an effect long after its exhibition had ceased. Dr. Storey believed in playing safe.

Dr. Storey asked what was the effect of the barbiturates on the liver. He had heard rumours of jaundice following operation. All these drugs were very toxic and on the whole best avoided. He had been told by a physician who had had great experience in tuberculosis that he had never seen a phthisical patient suffer ill-effects from ether anæsthesia.

DR. T. W. LIPSCOMB, speaking from the surgeon's point of view, said that it made a difference whether the patient was in a private or a public hospital. At private hospitals the surgeon was accustomed to working with one, two or three anæsthetists, and he knew he could safely leave the patient to the anæsthetist; but in a general hospital, with the constant changing of resident medical officers, the surgeon himself must take a hand in the supervision of the patient. Dr. Lipscomb would not allow the barbiturates to be used in his general hospital work; but he allowed paraldehyde. Six fluid drachms was the full dose, five the average dose, given *per rectum* in saline solution an hour and a half before operation. This had given the happiest results. Experienced ward sisters at Lewisham Hospital reported that patients were restful and comfortable, suffered less from post-operative symptoms, and required considerably less morphine subsequently when paraldehyde was used as indicated.

DR. GEORGE BELL congratulated the readers of the papers. In regard to premedication in local anæsthesia, Dr. Bell had followed Dr. Corlette's teaching and had had excellent results. It was most important to allow sufficient time (as Dr. Corlette said, at least two hours) to elapse before commencing the operation. The surgeon should never be in a hurry to commence and he might have to wait even three hours after the administration of the first dose of morphine. This to some extent was a disadvantage in operating under narco-local anæsthesia in a general hospital, where the surgeon's time was limited.

In regard to the barbiturates, Dr. Bell was glad to hear Dr. Hunter's remarks, based as they were on his wide experience in anæsthesia. Most of Dr. Bell's experience of these drugs had been with "Sodium amytal", and in some cases its effect had been bad. In regard to morphine, Dr. Crile had said that morphine should never be given to patients suffering from shock who were "blue".

Another point, brought up by Dr. Blashki, was the danger of ethyl chloride as an anæsthetic. For a number of years he had thought it was a dangerous anæsthetic; it seemed to be becoming more dangerous. Perhaps the danger lay in the way in which it was used now. Very severe spasm during induction occurred with ethyl chloride at times, and on one occasion Dr. Bell had had to perform tracheotomy to save the patient's life. A greater risk was the tendency to sudden collapse which took place, not during the induction period, but later during the administration of ether—a type of collapse which was not unlike that which took place at times during the administration of chloroform. Dr. Bell agreed with Dr. Storey that ethyl chloride should never be used.

The general practitioner might not have the opportunity to become expert nor well versed in the latest methods of premedication. If he administered ether alone, he would get fewer complications than if he experimented with new drugs. In practice ether was an eminently safe anæsthetic. It was safer alone than combined with the barbiturates and other such drugs.

Dr. Corlette, in reply, thanked members for their hearing and said that he was pleased and surprised that there had been so little unfavourable criticism. The subject was one on which they still had much to learn; he himself found that he learned something fresh every week.

In regard to the patient of ninety-one, when Dr. Corlette said that he did not know what he had had, he meant that he did not remember what premedication he had had. The patient had had a strangulated hernia with a con-

genital sac in the subcutaneous tissues; the sac had burst when the hernia had come down and the intestines had been found lying free in the fat of the abdominal wall.

Dr. Corlette said that he always liked listening to Dr. Storey, and though he did not always appear to agree with him, probably he really agreed with him more than with anyone else. Dr. Storey was always questioning authority, and so was he.

In speaking of dangerous drugs, Dr. Storey had not mentioned ether; like morphine or hyoscine, ether was a dangerous drug and it was possible to kill patients with it; it was also possible to poison the liver with it. A prolonged anæsthesia with ether, in old patients who had been subject to repeated inflammatory affections of the gall-bladder and common duct, left a bad effect for several days. Whether premedication was carried out or not, they must look to ether to see whether it had not something to do with any ill-effects.

Referring to Dr. Bell's remarks, Dr. Corlette said that it was really not so difficult to operate under local anæsthesia in general hospitals, because if the premedication were given one, two or three hours before, the surgeon had a good deal of latitude. But premedication must certainly not be given too soon before operation; it did not matter much if it was given two, three or even four hours before operation. The difficulty was thus overcome to a large extent. The greatest difficulty with local anæsthesia at a general hospital was that it slowed down the operation. The surgeon must go much more carefully and slowly; and this did not suit some people's style.

Dr. Hotten, in reply, thanked the members for their remarks. In reply to what Dr. Blashki had said in regard to preliminary treatment with insulin and glucose to prevent shock, he said that he had read something about this, but as yet had had no experience of it, and at any rate he scarcely regarded it as within the scope of the paper.

"Hebaral sodium" was regarded as a weak barbiturate. Dr. Hotten had had no experience with it.

The question of ethyl chloride and ether sequence had been discussed by several speakers. Dr. Hotten had unfortunately seen two cases in which death had occurred within thirty to forty seconds of the commencement of the induction. One patient, a woman with thyreotoxicosis, to whom ethyl chloride should not have been given, had had auricular fibrillation; she had suddenly collapsed and her appearance had been that of sudden syncope, similar to what Dr. Hotten had read of syncope caused by chloroform. The second case was also that of a woman with thyreotoxicosis. At the time of operation there had been no sign that the patient's condition was toxic and she had been given a small dose of ethyl chloride followed by ether. Death had occurred. The only explanation appeared to be that, though the dose had been small, the face-piece of the mask had been closely woven and the dose had produced the same effect as with chloroform—a sudden syncope. There were various theories as to the cause of sudden death in chloroform anæsthesia. Dr. Hotten thought that it was probably sudden ventricular fibrillation.

Dr. Hotten thanked Dr. Abbott for his remarks and said that even at the present time at the Royal Prince Alfred Hospital the anæsthetist had to stand quite a lot at the hands of the surgeon.

Dr. Hunter was his colleague, and they held similar views. Dr. Hotten said that although in his paper he had endeavoured to cover the whole field of premedication, he did not use premedication in every case; in fact he did not use it in more than 10% of cases in private practice.

In certain of the surgical units at the Royal Prince Alfred Hospital basal narcosis was used in a large number of cases. Dr. Hotten had had extensive experience with paraldehyde. Dr. Lipscomb had mentioned the dosage; it sounded a big dose, but to an average-sized female Dr. Hotten gave three-quarters of a drachm per stone of body weight, which worked out at about six drachms. Only when the patient was a big man did it become a large dose. He referred to a medical practitioner who had refused to be operated upon unless he was put to sleep; in this instance Dr. Hotten had employed one drachm per stone. The patient made an uninterrupted recovery.

If the anæsthetist talked to the patient and reassured him it might make a big difference in his attitude to the operation and obviate the necessity for big doses of prenarcotic. Premedication was not so satisfactory in public hospitals as in private hospitals where quiet surroundings could be maintained.

Dr. Hotten had been pleased to hear the remarks of senior colleagues concerning the barbiturates. The careless way in which they were used was astonishing. A general practitioner whom he knew well, a capable man, had employed "Sodium evipan" according to the traveller's instructions long before it had been tried at the Royal Prince Alfred Hospital. Astounding doses were used by some people. Dr. Hotten had been asked to see a healthy female who had been operated on for chronic appendicitis; she had been given 0·18 gramme (three grains) of "Sodium amytal" the night before and 0·36 gramme (six grains) on the morning of operation and had not regained consciousness for twenty hours. The surgeon had ordered the premedication and the anæsthetist had been called merely to give the anæsthetic. Who would have been responsible if the patient had died? Some patients had an idiosyncrasy to the drug.

In regard to the use of barbiturates in thyreotoxicosis, Dr. Hotten had no definite figures; he thought, however, that "Sodium amytal" had been used in very few cases, but with bad results. He knew of one patient who had died on return to the ward, and of another who had died the night after the operation.

DR. A. M. DAVIDSON thanked the speakers for their papers and said that it was the duty of the medical practitioner to make the operative procedure as comfortable as possible for the patient.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Melbourne Hospital on May 15, 1935. The meeting took the form of a series of clinical demonstrations by members of the honorary staff. Part of the report of this meeting was published in the issues of June 8 and 22, 1935.

Gastric and Duodenal Ulcers.

DR. S. O. COWEN and DR. W. ALLAN HAILES showed a group of patients to illustrate some of the complications and difficulties which might follow the operation of gastro-jejunostomy for gastric and duodenal ulcers.

They emphasized the fact that the cases did not illustrate the general results of the operation, because on the whole the late results of surgical treatment were probably somewhat better than those obtained by medical methods. If, however, recurrence or complications occurred after operation, the management of the patient was more difficult than it was in cases treated medically. Amongst the patients shown were two who were suffering from jejunal ulcer; one had been relieved by partial gastrectomy and the other, at his own request, was being treated by medical means. Another patient was suffering from recurring hæmorrhages after gastro-enterostomy, but had no dyspeptic symptoms. It was probable that he was subject to recurring subacute peptic rather than jejunal ulceration.

Dr. Cowen and Dr. Hailes showed, in addition, patients illustrating some of the complications of gastric ulceration. One, a woman, aged seventy-seven years, had had a history of gastric ulceration for forty years. The condition of her stomach was definitely hour-glass, but not obstructed hour-glass, and, despite her age, she demanded treatment because of the severity of the pain in her back and in her left side. At operation an hour-glass stomach had been found with an ulcer present which was just commencing to erode the pancreas. The condition had been treated by sleeve resection with satisfactory results.

Another patient, a man, aged thirty-five years, was presented, in whose case there was a proved association

between gastric ulceration and gastric carcinoma. Fifteen years previously a perforated gastric ulcer (pyloric) had been oversewn, and one year later gastro-enterostomy had been performed. Both these operations were carried out in another clinic. Apart from one attack of indigestion nine months afterwards, the patient had been quite well until about nine months before the meeting. Since then he had complained of severe pain in the left epigastrium, occurring two and a half hours after meals and partially relieved by food. He had lost 6·3 kilograms (one stone) in weight. X ray investigation revealed a contraction of the pyloric end of the stomach which was thought to be spasmodic. At operation a small mass was found at the pyloric end of the stomach, which was later proved on microscopic examinataion to be a carcinoma. From the adhesion present the carcinoma was established to have formed at the obvious site of the old perforation. Apart from this area and the area of the gastro-enterostomy the rest of the stomach was free from scars or adhesions. Partial gastrectomy was performed.

In the case of the next patient, J.B., aged forty-eight years, a large gastric ulcer had been excised in another clinic some two years previously. A large V-shaped resection was performed, the sides of the "V" being sutured together. Two years later the condition known as "football stomach" developed. The symptoms were continual dyspepsia and retention of food in the stomach for twenty-four hours. By means of X ray examination the existence of pylorfc obstruction was confirmed. Half of the barium meal was retained in the stomach for eight hours, and some was still present in forty-eight hours. A posterior gastro-enterostomy was done and the symptoms were relieved. By giving further barium meals the delay in emptying was shown to exist no longer. It was pointed out that the approximation of the pylorus to the cardia in large wedge resections was apt to cause this deformity unless some anastomosis was performed.

The last patient shown by Dr. Cowen and Dr. Hailes was a male, aged fifty years, with a long-standing history of a duodenal ulcer. The patient had been treated a year earlier in another clinic by posterior gastro-enterostomy and entero-anastomosis. He came under notice again two months before the meeting with severe hæmatemesis and melæna. After preliminary medical treatment a large gastro-jejunal ulcer found at operation was excised. This patient was the subject of the discussion on gastro-jejunal ulcération and the sequelæ of gastro-enterostomy for gastric and duodenal ulceration.

Chronic Infective Arthritis.

DR. REGINALD HOWDEN discussed the treatment of chronic infective arthritis with the stock vaccine which had been introduced by Dr. Warren Crowe, of London, and presented a series of patients, representative of the hundred patients who had been treated by him (Dr. Howden) with this method during the past twelve months.

Dr. Howden explained that the vaccine consisted of a type of *Staphylococcus albus* known as *Micrococcus deformans* (M.D.) and of a mixture of streptococci (St.), of which Dr. Warren Crowe had included 155 typed varieties. It was to be noted that the doses of vaccine given had been extremely small—even smaller than those advocated by Dr. Warren Crowe—with the object of obtaining a response rather than a reaction. Recently, with particularly susceptible patients smaller doses of the vaccine were given in an emulsion of olive oil, which had been forwarded to Dr. Howden by Dr. Warren Crowe, with suggestions for its use. Up to the present, in the majority of patients treated there had been definite diminution of pain and, as a corollary, more freedom of movement. In addition there was a general feeling of well-being, and the atmosphere of the clinic had become happy. Some of the patients were now back in active work. Any obvious focal sepsis, such as diseased tonsils or teeth, had been removed and cultures prepared. When *Streptococcus viridans* grew, an autogenous vaccine was prepared and injected with the stock vaccine. No selection of patients had been made, and whether the condition was of the atrophic or hypertrophic type, the great majority had had no other form of treatment.

Dr. Howden wished to stress three points: (i) the very small doses of vaccine used and the prolonged period over which they were given—most of the patients had been under treatment for more than six months, and some for a year; (ii) the improvement in the general well-being of the patients, as indicated by the weight charts; (iii) the inexpensiveness of the method in comparison with other methods.

All of the six patients presented had shown definite improvement during the course of treatment.

C.T., a male, aged forty-five years, married, was admitted to hospital on August 10, 1934. In July, 1934, he was in the Infectious Diseases Hospital at Fairfield with a sore throat, from which swab cultures failed to grow *Bacillus diphtheriæ*. He had suffered from painful joints at night and stiffness in the morning since he had had the sore throat. The joints affected were those of the hands, left wrist, left shoulder, both superior tibio-fibular joints, right elbow and both feet. Chronic suppurative tonsillitis was reported to be present. The blood sedimentation rate was moderately active. *Streptococcus hæmolyticus* and *Streptococcus viridans* were cultured from teeth and sockets and an autogenous vaccine was prepared. Weekly vaccine injections had been given, commencing on September 5, 1934, with 100 "M.D." and 1,000 "St." On November 7 autogenous vaccine 100 was added. Gradual increases were made and had reached 1,000 "M.D.", 10,000 "St.", and 8,000 autogenous vaccine.

F.A., a male, aged twenty-three years, single, was admitted to hospital on September 7, 1934. At the age of nine years he had had rheumatic fever, and at sixteen years was an in-patient at the Melbourne Hospital for two months with rheumatoid arthritis. In September, 1934, his left knee was stiff and swollen and he had pain in the right shoulder and in the right knee. Later the joints of his hands were swollen, painful and stiff. Investigation of teeth and throat revealed no abnormality. He had a course of treatment with vaccines ranging from 1,000 "M.D.", 100 "St." to 9,000 "M.D.", 900 "St."

F.O., a female, aged fifty-two years, was admitted to hospital on November 11, 1933, with pains in the ankles, knees, hips, hands and wrists of two years duration, but without disability. The left knee joint had become swollen six weeks previously to admission, and there was thickening of all the inter-phalangeal joints and of the metacarpo-phalangeal joint of the index finger of each hand. She had come under notice on February 7, 1933, with pain in the soles of both feet, and treatment with Crowe's vaccine had been commenced on February 28, 1933. Weekly injections, starting with 1,000 "M.D.", were increased gradually to 7,000 "M.D.", but the supply became exhausted. In the latter half of 1933 she had taken thyreoid, 0·015 gramme (one-quarter grain) twice daily, and during 1934 tincture of iodine, 0·6 to 0·9 cubic centimetre (ten to fifteen minims) daily. Crowe's vaccine was recommended on March 13, 1934, and was increased gradually to 80,000 "M.D." at intervals of two weeks.

M.D., a female, aged forty-two years, married, was admitted to hospital on February 6, 1935. Her right wrist had been painful and swollen for ten months, and two weeks before admission the left wrist was affected similarly. There was some contraction of the flexor muscles of the toes. The wrists were supported by strapping. Crowe's vaccine was injected each week, in doses varying from 100 "M.D." to 5,000 "M.D."

R.D., a male, aged twenty-six years, married, was admitted to hospital on October 30, 1934. When he was fifteen years old he was an in-patient for five weeks with rheumatic fever. He was in hospital again from August 8, 1934, to October 25, 1934, with acute polyarthritis. The joints cleared up fairly well with autogenous vaccine obtained from the proceeds of tonsillar puncture. Later the tonsils were removed and he had diathermy and massage treatments each day. A trace of albumin was

found in the urine persistently, but the results of the renal function tests were not abnormal. The wrists, elbows, shoulders, knees and spine had all become affected. In addition to autogenous vaccine, Crowe's vaccine was injected. Commencing with 1,000 "M.D." and 100 "St.", the vaccine had been increased to 20,000 "M.D."

A.R., a male, aged forty-two years, married, was admitted to hospital on February 19, 1934. He had jarred his right knee some ten or twelve years previously and had an attack of influenza soon afterwards. For two years his right knee had ached and the pain was becoming worse lately, though he had intervals of freedom from pain. Only five days before admission the right knee became painful and swollen, with restriction of flexion and of extension. The right knee was 3·1 centimetres (one and a quarter inches) larger than the left one in circumference. By May 8, 1935, the swelling had subsided and the circumferential measurements were equal. The knee was bandaged for support in the early stages of treatment and he was taking tincture of iodine, 1·0 cubic centimetre (fifteen minims) daily. On March 20, 1934, Crowe's vaccine injections were commenced, 1,000 "M.D." being the initial dose. The vaccine had been increased gradually to 70,000 "M.D."

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

Spark, Edward William, M.B., B.S., 1929 (Univ. Sydney), 75, Penkivil Street, Bondi.

Meurer, Theodore Christian, M.B., B.S., 1931 (Univ. Sydney), 35, Uralba Street, Lismore.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Biggins, Richard Maxwell, M.B., B.S., 1930 (Univ. Melbourne), Heygarth House, Echuca.

Donald, Russell Hughes Oxby, M.B., B.S., 1935 (Univ. Melbourne), Prince Henry's Hospital, St. Kilda Road, Melbourne.

Dunlop, Ernest Edward, M.B., B.S., 1934 (Univ. Melbourne), Royal Melbourne Hospital, Lonsdale Street, Melbourne, C.1.

Langley, Eric Francis, M.B., B.S., 1933 (Univ. Melbourne), McRae Street, Dandenong.

Latimer, George Wilfred, M.B., B.S., 1934 (Univ. Melbourne), Royal Melbourne Hospital, Lonsdale Street, Melbourne, C.1.

Murphy, Gregory Bernard Vincent, M.B., B.S., 1932 (Univ. Melbourne), 89, Studley Park Road, Kew, E.4.

Wallace, Robert, Junior, M.B., B.S., 1934 (Univ. Melbourne), Alfred Hospital, Prahran, S.1.

NOTICE.

THE following letter has been received from the Medical Secretary of the Victorian Branch of the British Medical Association.

SIR: At a meeting of the Council of the Victorian Branch held on 22nd ultimo the following resolution was passed:

> That attention be drawn in the journal to the fact that some friendly societies are requiring the services of medical men as specialists under terms and conditions which the Branch Council does not approve and that in future all agreements with lodges concerning specialists' services must be submitted to Council for approval before being entered into.

It is requested that you would be good enough to arrange for this matter to appear in the journal.

Yours faithfully,
C. H. DICKSON,
Medical Secretary.

Correspondence.

IODIZED BORACIC POWDER IN OTITIS MEDIA.

SIR: Considering what a useful adjunct to aural treatment is the dry iodized boracic powder in chronic suppurative *otitis media*, it is most surprising how tardy is its recognition.

My attention was drawn to it in 1930, since when I have found it quite one of the most potent treatments in chronic *otitis media*.

My opening remark was prompted by the fact that Dr. Lederman, of New York, claims to have used the treatment since 1916, yet many aural surgeons have not yet made its acquaintance. It is also stated that "Ulsanin", a patent powder which has been used in Germany for several decades for the same purpose, is of a somewhat similar composition.

Dr. Bettington's article is the second reference to this treatment that I have noticed in the Australian literature, and in each case the method was referred to as that described by a recent writer. I think it is only due to the originator of the treatment, Sulzberger, a chemist, to perpetuate his name in connexion with the treatment, especially as most of those using the treatment still use 0·75% iodine, the same strength that was used in the original Sulzberger powder.

Yours, etc.,
A. B. K. WATKINS.

Commercial Bank Chambers,
Bolton Street,
Newcastle,
New South Wales,
June 15, 1935.

A CARDIAC CLUB.

SIR: I am anxious to form a small cardiac club in this city on the lines of similar groups existing in England and the United States. The club would meet once or twice a year, in order to discuss cardio-vascular problems in a more detailed and intimate manner than is possible in a larger and less specialized gathering. If any of your Sydney readers are interested, I would be glad if they would communicate with me.

Yours, etc.,
KEMPSON MADDOX.

British Medical Association House,
137, Macquarie Street,
Sydney,
June 17, 1935.

CERVICAL SYMPATHECTOMY IN RETINITIS PIGMENTOSA.

SIR: In view of the prominence given to this matter in your journal a few years ago, the following extract from the report of the Ophthalmological Society of the United Kingdom should be of value. It is the official abstract of a

paper read at the last annual meeting, and it can be found in *The British Journal of Ophthalmology* for May, 1935.

Final Report of a Case of Retinitis Pigmentosa Treated by Cervical Sympathectomy, with Notes on Two Other Cases.

At the Annual Congress of this Society in 1931 the author reported a case of retinitis pigmentosa which had been treated by cervical sympathectomy four months previously. At that time the operation had been followed by an apparent improvement in the visual fields and visual acuity, and this had taken place in both eyes. It was realized that too short a time had elapsed since the carrying out of the procedure to draw any definite conclusions. This paper gives the findings in the case at the present time, four years after the operation, and also notes on two other cases which have been treated in a similar fashion. It is shown in the original case that the apparent improvement has not been maintained and that the boy is much worse than he was in 1931, prior to cervical sympathectomy. In the other two cases, while one has shown and maintained a slight improvement in visual acuity, in both there has been a progressive contraction of the visual fields. This has been taken as showing that the disease process has not been arrested.

The temporary improvement and its bearing on the ætiology of the disease are briefly discussed. The conclusion is arrived at that in the author's experience sympathectomy in retinitis pigmentosa fails to improve or to arrest the progress of the disease.

These conclusions are only what might be expected by anyone appreciating the pathology of the disease.

Yours, etc.,

E. TEMPLE SMITH.

"Locarno",
141, Macquarie Street,
Sydney,
June 18, 1935.

THE MORTALITY OF APPENDICITIS.

SIR: In the journal (June 15, 1935) Dr. S. Shineberg, of Bingara, asks me to "kindly give chapter and verse on which I base the statement" that "I know by experience that ethyl chloride followed by ether is a dangerous sequence and simply will not allow its use".

My adverse opinion of ethyl chloride appears on page 645 of the journal of May 25, 1935.

I have noticed often, when ethyl chloride has been used as a means of induction, that the patient has become a nasty blue colour and has given both anæsthetist and surgeon many moments of anxiety, some time after the giving of the drug had ceased.

During the past year there have been, to my own knowledge, three deaths on the table after the use of ethyl chloride, before the surgeon could begin his work. There was a different anæsthetist in each case.

It seems to me that our work is fraught necessarily with many risks and that the simpler and safer any procedure can be made, the better will it be for our patients and, incidentally, for our profession.

If open ether be given by the method introduced to Sydney by the late Gordon Craig in 1910, when I was resident medical officer at the Royal Prince Alfred Hospital and Dr. Craig had just returned from the Mayo Clinic, the patient need have no sense of suffocation. In this method one commences with a mask which is really open to the air.

While talking to the patient the anæsthetist very gradually shuts off the air by winding a wide bandage of gauze several layers thick till, by the time the patient loses consciousness, there is a small space about the size of sixpence uncovered by the bandage.

I used the method when resident anæsthetist at the Royal Prince Alfred Hospital in 1911. For my part there are so many possible errors of judgement in my own work that I desire all other factors to be as safe as possible.

Would Dr. Shineberg kindly produce the records of his "several thousand" anæsthetics given before the completion of his eleventh year of practice at Bingara? The population of this town, according to Moore's Almanac (1932) is 1,600.

Yours, etc.,

J. COLVIN STOREY.

185, Macquarie Street,
Sydney,
June 18, 1935.

Medical Prizes.

THE WALTER BURFITT PRIZE.

THE Honorary Secretaries of the Royal Society of New South Wales have forwarded the following notice in connexion with the Walter Burfitt Prize.

The following are the conditions for the award of the prize:

1. The Walter Burfitt Prize shall be awarded at intervals of three years to the worker in pure or applied science, resident in Australia or New Zealand, whose papers and other contributions published during the past three years are deemed of the highest scientific merit, account being taken only of investigations described for the first time and carried out by the author mainly in these Dominions.

2. The prize may be awarded to two authors working in collaboration.

3. The prize shall consist of a medal and the sum of £50.

It has been decided that the Australian National Research Council, the Royal Societies and universities of the various States and of New Zealand, and other scientific bodies in Australia and New Zealand shall be invited to submit the names and publications of workers whom they deem worthy of consideration, and that scientific workers generally shall be invited to submit their publications directly, while the Royal Society may award the prize to a worker whose name had not actually been submitted to it.

The third award will be made in November, 1935, for work published during the three years ending on December 31, 1934. Nominations and publications should be submitted to the Royal Society not later than August 31, 1935.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered, pursuant to the provisions of *The Medical Acts, 1925 to 1933*, of Queensland, as duly qualified medical practitioners:

Corbin, John Ogilvie, M.B., B.S., 1933 (Univ. Adelaide), Brisbane.
Gundelach, Ralph Henry, M.B., B.S., 1931 (Univ. Sydney), Stanthorpe.
Leiper, Alexander, M.B., Ch.B., 1925 (Glasgow), Innisfail.
Morton, Charles Robert, M.B., B.S., 1933 (Univ. Sydney), Toowoomba.

Obituary.

THOMAS NISBETT WRIGHT.

WE regret to announce the death of Dr. Thomas Nisbett Wright, which occurred on June 21, 1935, at Manly, New South Wales.

ALAN MUNRO EDWARDS.

WE regret to announce the death of Dr. Alan Munro Edwards, which occurred on June 27, 1935, at Hay, New South Wales.

ALFRED AUSTIN LENDON.

WE regret to announce the death of Dr. Alfred Austin London, which occurred on June 29, 1935, at Adelaide, South Australia.

JOSEPH LOVE.

WE regret to announce the death of Dr. Joseph Love, which occurred on June 29, 1935, at Melbourne, Victoria.

THE GEORGE MACDONALD TESTIMONIAL FUND.

THE undermentioned subscription has been received for the George Macdonald Testimonial Fund:
£2 2s.: Dr. Ethel Byrne.

Books Received.

THE CONSTRUCTION OF MODERN HOSPITALS AND THEIR EQUIPMENT: TECHNICAL AND PRACTICAL MANUAL FOR DOCTORS, ARCHITECTS, ENGINEERS, TECHNICIANS, STAFF OF ADMINISTRATION, STUDENTS AND PRACTITIONERS, edited by M. Schaerer S. A. Berne, with introduction by F. de Quervain, M.D.; 1935. Berne: Bühler and Werder. Crown 4to., pp. 660, with illustrations.

Diary for the Month.

JULY 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JULY 9.—Tasmanian Branch, B.M.A.: Branch.
JULY 12.—Queensland Branch, B.M.A.: Council.
JULY 16.—Tasmanian Branch, B.M.A.: Council.
JULY 16.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 17.—Western Australian Branch, B.M.A.: Branch.
JULY 17.—Victorian Branch, B.M.A.: Clinical meeting.
JULY 18.—New South Wales Branch, B.M.A.: Clinical meeting.
JULY 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 24.—Victorian Branch, B.M.A.: Council.
JULY 25.—South Australian Branch, B.M.A.: Branch.
JULY 25.—New South Wales Branch, B.M.A.: Branch.
JULY 26.—Queensland Branch, B.M.A.: Council.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser", pages xvi-xviii.

ALFRED HOSPITAL, MELBOURNE, VICTORIA: Honorary Officers.
LAUNCESTON PUBLIC HOSPITAL, LAUNCESTON, TASMANIA: Resident Medical Officer.
PRINCE HENRY HOSPITAL, SYDNEY, NEW SOUTH WALES: Junior Resident Medical Officers.
PRINCE HENRY'S HOSPITAL, MELBOURNE, VICTORIA: Resident Medical Officers.
ST. GEORGE DISTRICT HOSPITAL, KOGARAH, NEW SOUTH WALES: Honorary Officers.
SYDNEY HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Officers.
THE BROKEN HILL AND DISTRICT HOSPITAL, BROKEN HILL, NEW SOUTH WALES: Resident Medical Officer.
THE RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, REDFERN, NEW SOUTH WALES: Honorary Physician, Honorary Assistant Physician, Medical Registrar.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY HOSPITAL, are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Officer of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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